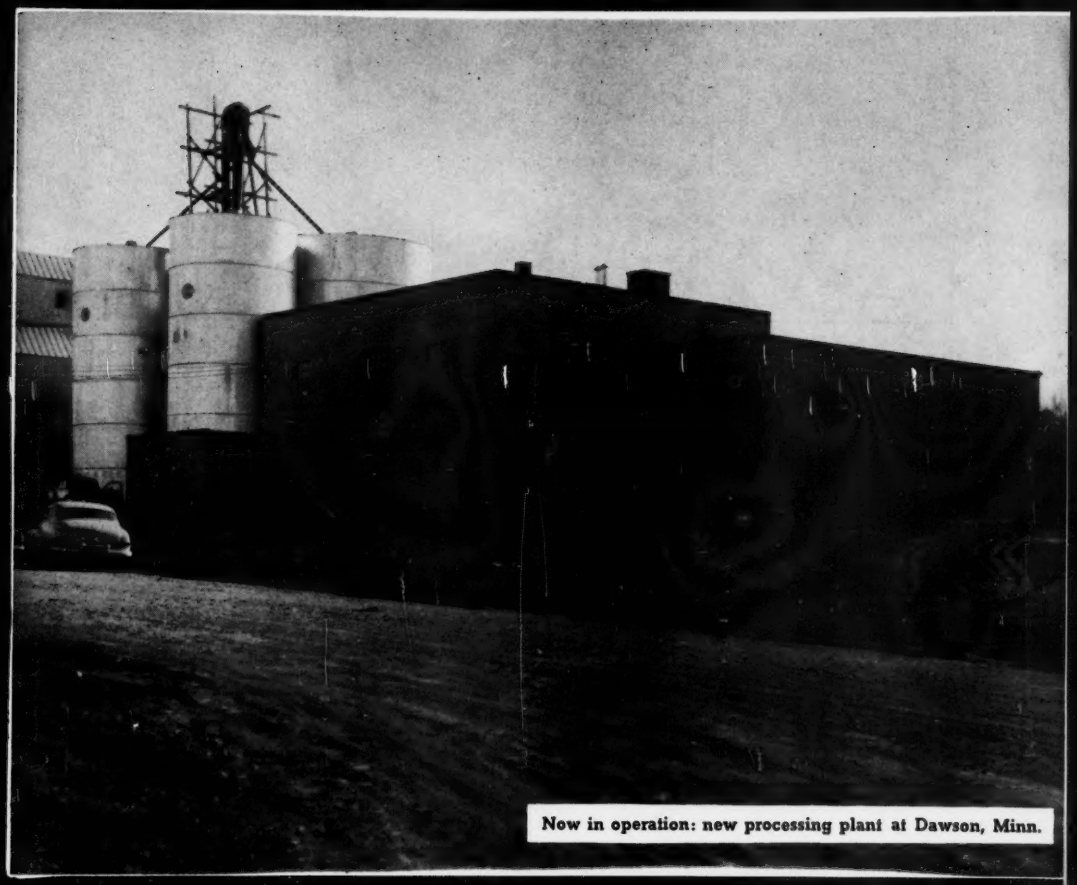
Soybean Digest



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AMERICAN SOYBEAN ASSOCIATION

VOLUME 18 • NUMBER 5 • JANUARY • 1958

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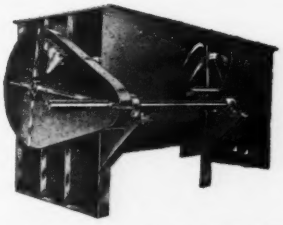

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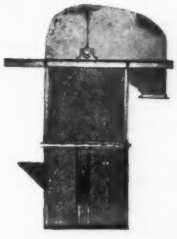

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EDITOR'S DESK

Time to Take Stock

Normally we do not deem it our function to editorialize on the state of the nation—unless it affects soybeans directly. But the recent disclosures of scandal and corruption make us cross the line unhesitatingly.

A government without a code of ethics is no better than a man without morals. The general pattern was set several long years ago when deep freezes and inside information used in grain speculation were condoned and upheld by our national administration. If such things were permissible at the top, it was only natural that they should permeate down through the ranks.

The unfortunate thing is that those thousands of faithful career employees of government who are not guilty, who would not think of doing a shady act, who have been conscientious and above-board in their actions, are taking a part of the rap for the unfaithful. For every man who has strayed from the path of right there are probably 99 who have not. But those 99 are now apologetic and embarrassed by the actions of their few associates.

Disclosures of the type recently brought to light make it increasingly difficult to attract capable, honest men to government service. Those who are honest feel that their reputation will be smeared along with those who are not honest.

Perhaps it will bring the American public to the realization that government has been rapidly assuming the proportions of an octopus, reaching further and further into the pockets of every man, woman and child. Perhaps it will focus attention on the fact that we as citizens do not want as much government as we have been paying for—if we were to get value received we would have government in everything.

There are things which government should do for the citizen. There are responsibilities of the citizen to the government. But I have my doubts that we can continue to continually take from government, as we have learned to do during the last two decades, without also surrendering to government. That I do not want. The American people must do some careful, honest, intelligent thinking about the course of our ship of state.

What Will Happen to Soybean Oil?

Soybean oil is regarded by many persons as a sick commodity. Pricewise, when compared with the figures for a year ago, that is correct. At that time soybeans were selling for only a little more than at present, but soybean oil was selling at a price range approximating the ceiling, imposed in late January, of 20.5 cents per pound.

Now we are in a different situation. The 1950 cotton crop was a very small one. The hog kill was smaller. There was very little competition for domestic markets. Now we are competing with a huge cotton crop and a very large hog crop. The market-place for oils is crowded.

A year ago Northern European countries were taking some supplies of whole soybeans for processing. They were also taking soybean oil in rather heavy tonnages. This year huge quantities of Asiatic soybeans are moving to European mills for processing—and the mills are taking their pay in oil. Manchurian beans are replacing American soybeans in those markets. We shipped too many poor quality soybeans into those markets.

A year ago the olive crop in the Mediterranean countries was a practical failure. Italy, Greece, Spain, Portugal—all are heavy users of salad oils. With no domestic olive production they bought American soybean oil. The oil from some 20 million bushels of soybeans went into that market during the winter months. In 1951 they have an adequate olive crop, will need no soybean oil except that which they take in trade for olive oil they sell to us.

Compared with other commodities, soybean oil is now under-priced. Compared with the war-time ceiling it is under-priced. Compared with the current demand it is a drug on the market. But at current prices it will begin to move into industrial and chemical uses, which have been out of the question during that period when the world's food needs demanded that all soybean oil go into the edible field.

It is our belief that soybean oil prices merely indicate the direction in which other and competitive oils are also going—and soybean oil is unfortunate enough to have gone first. Prices can not sag much lower until industrial usage will step in and absorb some of the tonnage which is now depressing the market.

But so long as current ceiling prices on soybean oil meal apply there is little hope of either soybean oil or soybean prices rallying much above current levels. As a rule-of-thumb the industry has figured that one-half the value of a bushel of soybeans laid in the oil, the other half in the meal. Current demand for meal suggests that perhaps we will come to regard soybeans as a protein producer, and soybean oil as a by-product of the production.

Should Keep a Crop Balance

Increased livestock production, together with dwindling feed supplies and the probability that on Oct. 1 of 1952 we will have on hand only about three weeks' supply of feeding corn make it even more important that 1952 soybean acreage be held at a reasonably high level—and that every possible bushel of beans be produced on that acreage.

Officials of PMA were faced with decision between more corn acreage and decreased soybean acreage, or maintaining the soybean acreage and not increasing corn. They compromised. Corn acreage goals for the Midwest have been increased. Soybean acreages for those states have been reduced. But soybean acreages for some of the Delta and Southern states have been increased. Total acreage of soybeans asked is very nearly the same as the actual planted acreage in 1951.

Indisputable fact is that one acre planted to soybeans will replace two acres planted to corn, when the meal is used to supplement corn supplies in livestock feeding. Ten million acres of corn and 2 million acres of soybeans will produce more pounds of livestock products than 12 million acres of corn. The right combination of the two crops will produce more of those livestock products the American public demands than too many acres of either crop.

We must maintain a balance between the two crops. And that balance must be maintained in the livestock production areas. Soybean meal out of position does not produce pork in Iowa. Planning officials have done a sincere job of analyzing the nation's needs. Prices and the weather man will now determine what the actual planted acreages turn out to be. Short seed supplies in the oat areas may limit that crop, increase corn and soybeans. High priced corn and low priced soybeans at planting time may throw our relationships, acreage-wise, out of balance.

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Be sure the feed you get me contains Soybean Oil Meal. I like it and it will mean extra profits for you.
YOUR FIRM NAME

More Meal Booster Ads

At last your Association has another series of four ads talking up the virtues of Soybean Oil Meal in livestock feeds. They are designed for your use in local newspapers—will keep your name before the public.

The series includes poultry, dairy cattle and one general ad. Processors and feed dealers will find them of special value.

To partially cover costs you may have the set of four newspaper mats for $1.25; 10 sets for $1 each.

Order Series D mats from: American Soybean Association, Hudson, Iowa.

We still have left some of the Series B mats on cattle feeding and Series C on hog feeding. Same price as above. Or we'll send you proofs of all sets for your inspection if you wish.

GROWERS

International Winner

Ben T. Gildersleeve, Hudson, Ill., won the grand championship with his soybean exhibit at the International Grain & Hay Show at Chicago, Nov. 23-30.

Gildersleeve was first place winner with an exhibit of yellow soybeans in region 4 and 8.

Reserve champion was William R. Beattie, Staples, Ontario. Beattie was first place winner with yellow soybeans in region 1 and 2.

John Taylor, Virginia, Ill., was second place winner in region 4 and 8. R. H. Peck, River Canard, Ontario, was second place winner in region 1 and 2.

First place winner with soybeans in region 3 and 7 was E. W. Doubet, Hanna City, Ill. Second place winner was John O. Pugh, Venedocia, Ohio.

60-Bushel Yield Wins

Earl Musgrave of Morgan County, near Stilesville, is the 1951 champion soybean producer in Indiana. His yield of 60.9 bushels per acre tops 103 participants in the 11th annual contest sponsored by the Indiana Corn Growers' Association in cooperation with the Purdue University agronomy department.

Musgrave's winning yield is the second highest in the history of the state competition. George Shell of Madison County checked the record yield of 61.8 bushels per acre in 1949.

Placing second this past year was Russell Wealing of Benton County with a yield of 58 bushels, while Henry Preiser of Cass County was third with 55.7 bushels.

The Musgrave field was planted to the Lincoln variety in 32-inch rows in early June at the rate of five pecks per acre. The usual rotation is corn, soybeans, oats, and clover. Average farm fertilization and cultivation were practiced and the soys were combined in mid-October.

The Musgrave farm is near one of the areas where soybeans were first grown extensively in Indiana, according to K. E. Beeson, Purdue extension agronomist. This fertile valley in northern Morgan and southern Hendricks Counties has been especially well adapted to soybean production. In these counties, the Parsons were pioneer growers, and later, the Edmondsons were distributors of certi-

"We've Got a Secret Weapon, Joseph V. Dzugashvili!"

Grim times these are, for a young couple facing a new life together on a farm or elsewhere. But they do so knowing we here in America have a secret weapon that Iosif Vissarionovich Dzugashvili, alias Joseph Stalin, can never copy.

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Back of any part-war or full-war effort is the great "know-how" of our industry. The only nation Iosif fears is the leading grow-ahead nation in the world. When Dzugashvili says he fears our industrial system he says, in effect, that he fears our free minds and our incentive way of doing things. Let's never copy Communism, or any other "ism." Let's copy our own success, which has made our nation the envy of all the world.

* * *

Here at Cargill we have an incentive to serve you. Under our American system we must *earn* your grain business by constantly trying to do better and better. To merit your feed and seed business, we can't depend on some political overlord. We have to give you better feed and seed—and better service, too. We have to do that every day, night and day.

Knowing all this, we try harder and harder, all the time.

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This Advertisement also appears in The Farmer, Wallace's Farmer, The Dakota Farmer and 11 other publications.

fied seed of the early grown soybean varieties of the state.

While almost every variety found in Indiana was included in the check-up this year, Lincoln and Hawkeye were grown by 81 percent of the contestants. Practically all were planted in rows with the corn planter. To get more rows per acre, some growers pulled in the marker, while a few like Musgrave set the planter wheels at less than 40 inches.

Direct fertilization did not seem to be an important factor in contributing to yield, Beeson said. A high fertility level, good farming practices, high yielding varieties, and a favorable growing season were the major contributing factors. At planting time, many growers used 100 to 200 pounds of 0-12-12 analysis and a few plowed down fertilizer.

Winner at Toronto

The happy looking gentleman on the right is R. H. Peck who has just been presented with a sterling silver tray and a $100 check by J. G. Campbell, general manager, Victory Mills Ltd., Toronto, for winning the Royal Agricultural Winter Fair's 1951 world championship in soybeans.

The trophy, emblematic of the championship, was put up for annual competition by Victory Mills. As you can see, it is an exceptionally handsome trophy. The base is of walnut, surmounted with a solid slab of onyx. The farmer, the mill buildings and farm buildings are of copper and the field of soybeans is also of copper but especially processed so that it is of a colorful green shade.

At left, J. G. Campbell, general manager, Victory Mills, Ltd., Toronto; right, R. H. Peck, River Canard, Ontario, winner of the Royal Agricultural Fair's world championship in soybeans.

Bob Peck is one of the original soybean growers and he has specialized in the production of outstanding registered seed of the top soybean varieties. The variety with which he captured the 1951 world honors is Harosoy, developed by the Harrow Experimental Station and introduced as a licensed variety last year. Harosoy is a medium maturing variety and has given excellent yield results in early tests. It will be another year before Harosoy seed is available in quantity.

Peck besides being one of the leading growers, is the Canadian director of the American Soybean Association and is also a member of the Ontario Soybean Marketing Board. No one has been more keen and helpful in the spectacular advance of soybeans in Ontario than Peck. Proof of this advance is that the Department of Agriculture, Statistical Branch, estimates that last year's Ontario soybean crop will mean 12 million dollars gross to Ontario farmers.

A Rice Comeback?

A rice growing enterprise in southeast Missouri that may expand to 10,000 acres in 1952 is reported by Cordell Tyndall in a recent issue of Missouri Ruralist.

Leader in the venture is O. H. Acom, Wardell, Mo., who is well-known to Soybean Digest readers since he is a member of the board of directors of the American Soybean Association, and the leading soybean producer in Missouri. Judge Acom had 300 acres of rice under cultivation this past year.

To further the project Acom built a new drying tower, a storage elevator, and he has a 150-foot well for watering 200 acres of rice.

Rice growing flourished in southeast Missouri during the twenties, but went out during the depression due to low prices, poor yields and weeds.

The late B. M. King of the Missouri State Experiment Station showed growers how to whip the weed problem by using a two-year rotation of rice and soybeans. The scheme was such a success and soybeans were so profitable rice was dropped out of the rotation. Why bother with rice when soybeans did so well on the gumbo soils? Today the area is top for soybeans in the state.

And maybe rice will come back in a rotation with soybeans.

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Is Hog Breeding Herd on Way Out?

FEEDING

Livestock feeding has been hit with so many new developments the last several years that we doubt if even an expert could keep up with them.

These include of course B-12 and the antibiotics, and new concepts in the feeding of ruminants—you have to feed the rumen bacteria as well as the cow.

Now the latest is the announcement of a synthetic sow's milk by Chas. Pfizer & Co. Its use makes possible the removal of the pigs from the sow almost immediately after birth. It may well pave the way for the pig hatchery to eliminate the breeding herd from the average farm, just as the incubator did away with the setting hen.

Terralac as the product is called includes dry skim milk, lard, fish solubles, vitamins and minerals, fortified with terramycin. Here are some of its suggested advantages:

1—It gives the pig the advantage of the antibiotic from the first and not just from the time when he is put on pig starter. As a result pigs are 10 to 35 percent heavier at weaning time.

2—It eliminates the problems of crushing the pigs by the sow or the pigs contracting diseases from the sow, since they are taken away a day or two after birth. The bane of pig hatcheries has been periodic waves of disease. Separation of sows and pigs can break this cycle. Mortality has been reduced from 35 percent to 5 to 10 percent by the feeding of Terralac.

3—Relieved of the necessity of nursing her pigs, the sow can now raise three litters a year instead of two. She can be rebred or sent to market within a few days after farrowing.

4—There is no limit to the size of litters that can be raised on Terralac. There are strains of swine that consistently throw 15 or 16 pigs in a litter. But the sow can care for only 10 pigs at most.

So the new synthetic milk opens up the possibility of more litters per year, faster growing pigs, and raising many more pigs per litter.

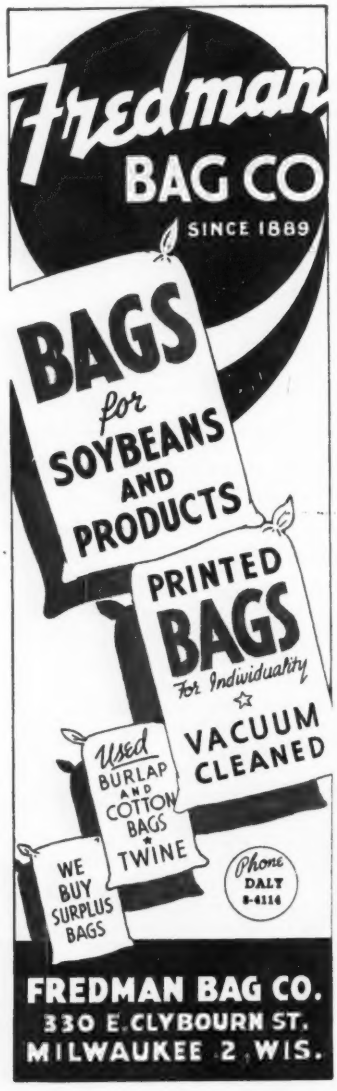
Many pigs handled this way have been brought to weaning status at five weeks and have gone into the feeder lots on a par with eight-week weanlings.

Pigs raised on Terralac should be raised in a high-temperature, high-humidity environment and have a near constant supply of milk.

The Pfizer Co. has used phonograph records with sow and pig squeals played automatically every hour to call the pigs to the trough. Otherwise, without the sow to remind them, they are apt to sleep through meal time.

For a report of studies on synthetic sow's milk see:

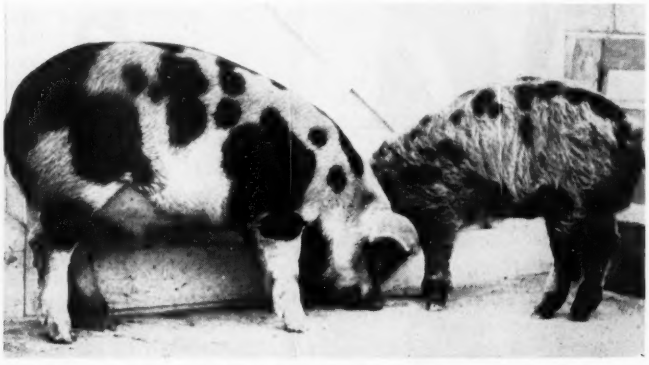
RECENT ADVANCES IN BABY PIG NUTRITION, by B. E. Sheffy, department of animal husbandry, Cornell University, Ithaca, N. Y. Proceedings of the 1951 Cornell Nutrition Conference for Feed Manufacturers. Nov. 1951.



Soy Meal as Pig Feed

The two pigs shown below are a dramatic example of one reason why a University of Georgia professor of animal husbandry is urging Georgia farmers to grow soybeans.

The two pigs were the same size at the start of an experiment at the University of Georgia. And they received exactly the same ration except that the supplement of the pig at the right was 100 percent "detoxified" cottonseed meal, while the one at the left received cottonseed meal and solvent process soybean oil meal half-and-half. Both received ground white corn, a mineral mixture and added vitamins.



The two pigs above received the same ration of corn, protein supplement, minerals and vitamins. But the pig at right received an all-cottonseed meal supplement. One at left had a supplement of half soybean meal, half cottonseed meal.

The pig at right gained .68 pounds daily and weighed 90 pounds when the photo was taken. The one at left gained at the normal rate of 1.40 pounds daily and weighed 151 pounds. Neither received any animal protein, antibiotics or a B-12 supplement.

Cottonseed meal has been toxic to swine in the past. New methods apparently are able to remove the gossypol that causes the toxicity. But even the degossypolized cottonseed meal apparently lacks one or more factors that the soybean oil meal supplies to pigs.

Says I. A. Dyer, one of the authors of the experiment, in Southern Livestock Journal: "From the protein supplement standpoint, we (in Georgia) are at a disadvantage in that two of our major protein supplements are of relatively poor quality for hogs, especially in drylot feeding. I have reference to cottonseed meal and peanuts and/or peanut meal. In drylot feeding, commercial cottonseed meal should not exceed 10 percent of the total ration, although it may be used to a greater extent for pasture-fed hogs.

"It is of particular interest to me to see the increase in production of soybeans. In 1949 only 112,000 bushels of soybeans were produced in Georgia. One year later, 204,000 bushels were produced. This is an increase of 82 percent. The expanded production of soybeans should be encouraged since the quality of protein in soybean oil meal is far superior to that of most plant proteins."

Antibiotics Again

An experiment at the Louisiana Agricultural Experiment Station offers further evidence that feeding antibiotics to dairy calves will have a beneficial effect.

An aureomycin supplement fed to 14-week-old dairy calves stimulated their growth by about 35 percent for the first six weeks, and resulted in better appearance and condition of the animals.

The increased rate of growth declined after that. After 20 weeks of feeding the antibiotic supplement the calves showed about the same rate of increase as calves not getting the antibiotic.

The feeding of aureomycin produced no detrimental effects.

ANTIBIOTIC FEED SUPPLEMENT (AUREOMYCIN) FOR DAIRY CALVES. By L. L. Rustoff. Louisiana Agricultural Experiment Station, Baton Rouge, La. Journal of Dairy Science, Vol. 34, July 1951.

Protein for Ruminants

We have been saying that *quality of protein* is not important for ruminants. But a number of tests at the Oklahoma station comparing cottonseed cake with soybean cake in supplementing dry native grasses for wintering big steers have shown greater gains for the soybean cake in each case.

Further tests have been made at Oklahoma in an attempt to determine the value of different proteins in steer feeding. Soybean and cottonseed meals and a sesame-soybean meal combination have been compared with no conclusive results. Further trials apparently are necessary.

For complete reports of these tests see Oklahoma Miscellaneous Publication No. MP-22, FEEDING AND BREEDING TESTS WITH SHEEP, SWINE AND BEEF CATTLE. Progress Report 1950-51, Oklahoma Agricultural Experiment Station, Stillwater, Okla.

—sbd—

Please mention the Soybean Digest when writing to our advertisers.

THE COVER PICTURE

The new trichloroethylene solvent processing plant of Tri-County Cooperative Soybean Association at Dawson, Minn., went into operation Nov. 26, and the community celebrated with an all-day open house Dec. 8.

The 50-ton-per-day soybean mill, an installation of Crown Iron Works, Minneapolis, Minn., was truly a community project. The Dawson Service Club furnished the initial steam to get the venture started, and the $225,000 capital necessary to put it in operation was raised locally.

Five local elevators own stock in the mill, buy beans for it and furnish storage capacity in addition to the 83,000 bushels storage afforded by the mill. They are the Farmers Cooperative Elevator at Dawson; the Farmers Elevator and Mercantile Co., Boyd; Farmers Mercantile & Elevator Co., Madison; Farmers Union GTA, Madison; and Farmers Union GTA, Haydenville.

President of the board is Carl M. Hanson, Louis Sandbakken, manager.

The Dawson Sentinel published a 26-page issue, the largest in its history, in honor of the mill's opening.

This month's cover picture, showing the Dawson mill, appears through courtesy of the Dawson Sentinel.

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WHAT'S AHEAD?

Well over 95 percent of soybean oil meal goes into livestock feeds.

At the threshold of 1952 ASA's secretary-treasurer reviews soybeans as an industry and crop—and looks ahead. From an address before the National Farm Chemurgic Council.

By GEORGE M. STRAYER

ROSWELL P. GARST, writing in Farm Quarterly, states that there have been three great and significant changes in American agriculture during the past two decades—changes that have enabled the United States to feed not only her own peoples but to serve as the great storehouse of food for the world. One of those major changes, as outlined by Garst, was the introduction of the soybean crop commercially, with its attendant production of vast quantities of oil and protein.

During the period to which Garst refers in this article the United States has, for the first time, become self-sufficient in fats and oils, in fact we have become a net exporter of oils and oilseeds. It was soybean oil that enabled us to quickly replace the fats and oils we had been bringing into the U.S. from tropical areas previous to World War II. And it was soybean oil meal which enabled us to increase our livestock production to supply the milk, meat and eggs which were needed for a war-time economy, without having to increase corn acreage proportionately.

America's farmers, during that period, have increased their efficiency of production to a point where the average cow produces 5,500 pounds of milk per year instead of the 3,500 of two decades ago; to the point where the average hen now produces 165 eggs per year instead of the 105 of 1930; and where the average market pig comes to that market a full six weeks to two months earlier carrying the same weight. Those vast strides forward in livestock feeding have come about through increased usage of protein feeds, and through greater knowledge of and more intelligent usage of those proteins.

And what is that protein feed today? The Bureau of Agricultural Economics estimates indicate that out of a total 1951 consumption of approximately 11 million tons about 5.2 tons or nearly one-half will be soybean oil meal. Out of 8.7 million tons of vegetable proteins utilized, 5.2 millions or about 60 percent will come from the soybean crop.

Advances in Feeding

And today tremendous strides forward are being made in livestock feeding through the addition of vitamin B-12 and antibiotic to soybean oil meal and the formula feeds which embody soybean oil meal as the basic ingredient. Great progress has already been made in this field, and it is almost certain that we have only scratched the surface and have much farther to go.

Unlike most other agricultural crops which are grown in great quantity in the so-called "bread-basket" of the world, soybeans are not utilized in the area of production in their whole or unprocessed state. Corn is largely fed to livestock. Oats are fed to livestock. Wheat is milled for human consumption. Soybeans must first be processed before they can be utilized in our present-day economy. That processing consists of the removal of the approximately 20 percent oil which the soybean contains, leaving as a residue the soybean oil meal.

The first processing of soybeans in the United States was done in plants constructed for use on cottonseed. As soybeans came into prominence in the Cornbelt section, processing plants designed especially to handle the crop started to come into the picture. First there was usage of the screw press which had been operating on flaxseed, copra and animal products. Nearly all of the early soybean processing was done on these so-called "expellers" or screw presses, and as the demand for facilities of this type increased the manufacturers of these units improved them—especially the tempering and pre-cooking segments. Up until a few years ago the major portion of all the soybeans produced in the United States was processed in these screw press units, which used a combination of heat and high pressures to literally squeeze the oil from the flaked soybean.

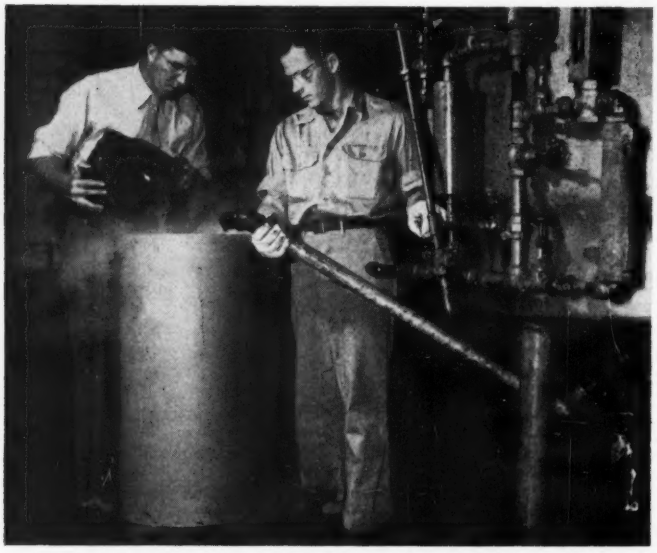
One of the most impressive developments in the soybean industry has been the rapid and wide-spread shift toward solvent extraction. Literally explained, this is a process of dry-cleaning the oil from the soybean flakes, just as you would remove oil from a fabric by dry-cleaning it. This shift is very encouraging because the more complete separation of the oil and the protein which this process brings favors the development of in-

dustrial uses for each of the end products. Where the screw press method of processing left a residual oil content in the meal of from 3.5 to 5 percent, a well designed and correctly operated solvent plant will leave a residual oil content of from only .5 to 1 percent. Thus, when operating on soybeans carrying 20 percent oil the oil yield from a bushel of that crop may be as much as 20 percent greater when processed by the solvent method.

So long as soybean oil is used largely as human food, and thus remains relatively higher priced than the meal, the trend toward solvent extraction will certainly continue. In my estimation it will be but a matter of a few years until practically all of the processors will be forced to use this method in order to compete on a financial basis.

When processed by solvent method each bushel of 60 pounds of soybeans will yield about 10.5 or 11 pounds of oil, dependent on oil content of the raw material and the efficiency of the plant operation. It will also yield about 45 pounds of soybean oil meal. These two commodities, and their components, should be considered separately in light of their present uses, and their futures.

Today it would appear that in the foreseeable future soybean oil will continue to be used largely for human food. I would like first to consider those uses, then the usage in the industrial fields. Shortening is the major user of soybean oil, using 710.6 million pounds in 1949. Margarine is the second largest user. Other food products such as salad oils, salad dressings and cooking oils stand third. In this field the major problem of soybean oil has been the tendency toward flavor instability when stored under certain conditions.



Steaming molten polyamide resin is piped into fiber drums for hardening and shipment at the General Mills' plant. This soy product finds wide usage in the packaging and adhesive fields.

One of the major contributions to the soybean industry has been the concentrated study on the factors affecting flavor stability in soybean oil. The Northern Regional Research Laboratory, margarine manufacturers' private laboratories and a host of others have worked in this field. Knowledge developed at the Northern Regional laboratory on the relationship of metal content to soybean oil stability has already led to some commercial developments and undoubtedly will lead to others.

More Work Needed

The problem is not yet solved. Much more needs to be done on the fundamental reaction and behavior of soybean oil. We need a more complete understanding of the flavor instability in both the liquid and hydrogenated forms of oil. The industry has made tremendous progress in the production of bland, stable products, both liquid and solid, but we need to know much more, and it is in this field of research that we will see some of the most significant developments in soybean chemurgy.

Research has shown that the use of citric acid, citrates, and other metal inactivating compounds will contribute toward greater stability of soybean oil and products from it, and permission has now been granted by the Food and Drug Administration to allow the use of small quantities of these harmless materials in the oil immediately following the refining process, thus producing a margarine of greater flavor stability. This application was filed by one of the margarine manufacturers, and the American Soybean Association filed a brief in support of the application. As chemistry and industry learn more about soybean oil, this relative newcomer in our foods and industrial economy, we can expect to see great strides forward in the widening of the field of usage.

Oil in Industry

Today about 80 percent of our soybean oil production is used in food products. So long as present price relationships prevail this percentage will probably continue, but the use of soybean oil in paints, varnishes, lacquers, linoleums, oilcloths and many other types of surface coatings is an intriguing field. As an example of the developments in this field, let's take a quick look at the polyamide resins being produced commercially from soybean oil by General Mills, chemical division. First produced commercially by this company in 1947 these polyamide resins have done well for themselves, bringing the consumer superior packages by serving as grease, oil, water, and water-vapor resistant coatings for paper, foil, cellophane and other materials. They have also found extensive use as heat-sealing adhesives for labels, as laminating resins and as glossy undercoatings for bright, attractive cartons. In the leather industry they are used as impregnants to improve the water and solvent resistance of handbags, jackets and other products. They have found a use as coating agents for metals to prevent corrosion, and as vehicles for printing inks.

Now, five years after the commercial introduction of polyamide resins produced from soybean oil the General Mills research men have found a way to make a water suspension of these materials. Previously applied only under heat or in solvents, this water suspension method of application promises to open up a wide new

vista of usage for this soybean product, and to create markets for more and more bushels of soybeans in so doing.

I would like to mention another field of development which is opening up for a portion of soybean oil. For years the soybean processing industry has wondered what to do with the "foots" produced in the processing plants. High in lecithin, some of this troublesome foots has been utilized for the production of that product.

The commercial soybean lecithin which we have known is a mixture of soybean oil and at least four distinct phosphatides. Each phosphatide differs in its chemical composition and properties. Fractionation, and the production of "tailor-made" lecithins hold the hope of increased usage and increased value for this by-product in the future.

Chemical modifications of lecithin have recently received considerable attention from research workers. As a result, some widely varied physical and chemical properties have been uncovered. One such chemically modified lecithin is readily dispersed in water, in contrast to the lecithin of commerce, and has a waxy, semi-friable consistency rather than a viscous pastiness. These properties recommend it for specific applications, and point the way toward many other developments which we may expect in this field.

Market on Foots

Soybean foots are becoming a major source of dimer acid, which is now in commercial production by at least one company, and we have every reason to believe that other commercial chemicals will probably be produced in quantity from this material once regarded as a waste material of the soybean industry. In fact, it would now appear that we have only scratched the surface in this field of development, and that markets for soybean foots might conceivably become an important segment of the soybean industry.

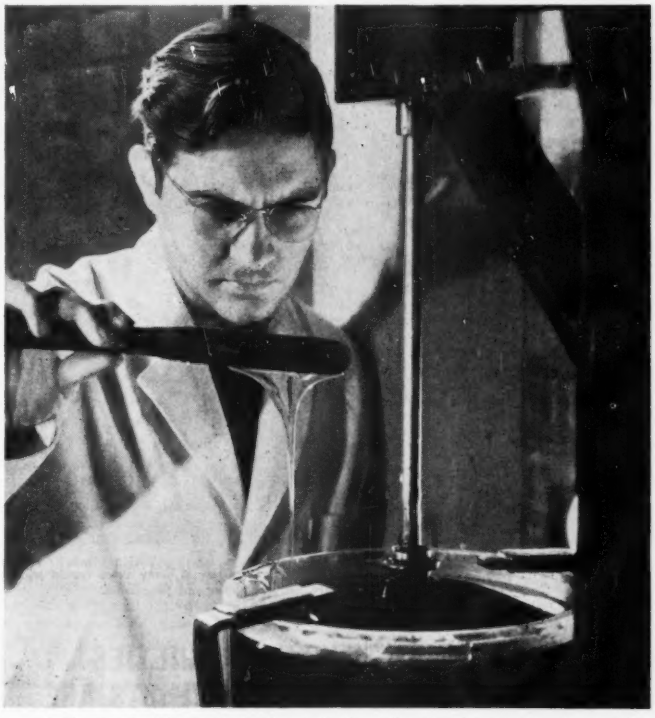
You have heard told the story of the usage of soybean oil in the surface coating industry, hence I will but touch on that field. It will suffice to say that the extent of usage of soybean oil in this field will be largely governed by economics, and that as long as prices of edible oils stay relatively high the major portion of the soybean oil production will go into food products. However, our chemists and manufacturers now know enough about the usage of soybean oil in paints, enamels, varnishes and such products that whenever prices permit large quantities of soybean oil will flow into those fields of usage. There are many unanswered questions in this field, but certainly our knowledge of drying oils is much greater than ever before. The economics of oil prices will govern future developments in this field. Fractionation of soybean oil offers great possibilities when the economics of the industry make it desirable to separate the drying from the non-drying portions of the oil.

The other great product of the processing of the soybean is soybean oil meal. Composed of 40 percent or more protein, it makes up by far the greater tonnage. One of the most nearly balanced of the vegetable proteins, soybean oil meal offers a vast storehouse of development that has hardly been explored.

Today well above 95 percent of the total tonnage of soybean oil meal being produced goes into livestock feeding. High percentages will continue to go into that field of usage over a period of years. Ironically, although we know that soy flour is one of the best protein supplements for our basic foods it is not now being used as wisely for human food as for livestock feeding. We have learned to add other factors which bring the nutritional levels of soybean oil meal up to a point where they are equal to or perhaps superior to animal proteins, but we have not learned how to produce food products from soybean proteins which will have widespread taste appeal and consumer acceptance, in spite of the inherent nutritional values. This is one area of usage where we need much more exploration, and one which offers great hope for expanding markets.

The soybean processing industry is well aware of the necessity of suitable processing methods to develop the maximum nutritional value of the meal for livestock feeding purposes. Steps have been taken to raise the general level of processing methods, to standardize the high quality level of the product, and the men composing the Soybean Research Council have spent a vast amount of time and effort in assisting specific plants which their problems involved in merchandising a high quality soybean oil meal. There is still room in this field.

(Continued on page 32)



A laboratory technician tests the viscous liquid resulting from the extraction of soy protein for use in making textile fiber. Textiles are still a promising field for soy protein.

Developing and Using New Varieties

By DONALD G. HANWAY

Assistant Agronomist, University of Nebraska, at the Nebraska Soybean Conference at Fremont, Nebr.

—USDA photo by Killion

The 10 to 15 years' work it takes to develop a new variety is many times repaid by the increased income the variety brings farmers and processors.

THE LINCOLN AND HAWKEYE VARIETIES DEVELOPED BY THE AGRONOMISTS ARE SUPERIOR--BUT BETTER ONES ARE COMING

TEN YEARS ago the soybean varieties that most Nebraska farmers will plant next spring did not exist as commercial varieties. The acreage at that time was planted to Mukden, Richland, Illini, Dunfield, and Manchu.

Each of these varieties had weaknesses from the grower's point of view. Mukden was comparatively low in yield and lodged considerably. Richland stood up well but was short and carried pods close to the ground. Illini was late and lodged badly. The other varieties had similar weaknesses. The processors also saw the need for varieties with higher oil content and better seed quality.

Higher Yielders

Present-day varieties are not perfect, but they have demonstrated such superiority over the old varieties that farmers grow them in preference. The advantage of the newer varieties has been estimated at 20 percent in yield. The percentage of oil in the beans has been increased nearly 3 percent. Since these improved varieties are grown on several million Cornbelt acres each year, this yield advantage means several millions of dollars in increased income to the farmers. The increased oil content is a very important item to processors when multiplied by the number of tons involved.

A rather extravagant estimate of the money spent for soybean improvement in all states from all sources of revenue is $500,000 annually. The money invested in this program seems to be returning a high rate of interest. This rate of interest is going to keep climbing, for present varieties will be replaced in time by others that are still better.

What is the procedure used to develop new, improved varieties? Each of the varieties grown 10 years ago had some good qualities along with its shortcomings. The sciences of genetics and of plant breeding had shown that the good characteristics from two different varieties could be combined into one by crossing the two and then selecting in subsequent generations those plants that appeared to have the desired combinations of characters. To insure that these selected strains would actually perform better under field conditions than the old varieties, they were tested under comparative conditions in different areas. Those proving superior were

—Purdue University photo

A typical adaptation and yield test plot at Purdue University used in developing new varieties of soybeans.

increased, named, and released as new varieties.

The breeding procedure as stated seems simple and straightforward. Let us examine it more closely. What is the starting point in such a breeding program? The answer, of course, is the choice of the varieties to be used as parents. Together the two varieties which are to be crossed should show the characters that the breeder wants to combine into a single strain. The following characteristics directly important to the grower receive the most attention in the breeding program: yield, lodging resistance, proper maturity, adequate height, height of lower pods above the ground, lack of excessive branching, resistance to shattering, and disease resistance.

Must Compromise

Since protein content and oil content are the important characteristics from the processing point of view and indirectly determine the price the farmer receives for each bushel of soybeans, any new variety must be satisfactory in these two attributes. No two varieties can be chosen that will together embody all these characters to the desired degree. The breeder, therefore, must start out with a compromise. Nevertheless, the choice of parental varieties is very important.

Making crosses in soybeans is a tedious process. Since the flowers are normally self-pollinated, it is necessary to remove the 10 anthers (pollen sacs) from the flower of one variety before they release pollen and then manually apply pollen from the other variety to the stigma of the flower. Sitting flat on the ground in the field and using binoculars for magnification, a technician is able to emasculate the tiny flowers with a pair of small tweezers and then pollinate them with the desired pollen. Few crosses can be made in an hour. If only 20 percent of the flowers so pollinated develop into pods, the breeder is not especially dissatisfied.

The seeds that develop from these flowers grow into F_1 plants that look alike. The seeds which F_1 plants produce, however, grow into plants no two of which are alike. The breeder selects from this generation plants that appear to be most nearly like what he wants. The progeny from each of these plants is again variable, though not as variable as the previous generation. Some progenies will appear better than others. The breeder will choose the best plants from the best progenies. At about this stage in the selection procedure the breeder begins to compare the better selections in replicated tests for yield. Samples from these tests are analyzed for oil and protein content.

Only selections from the better strains are retained each year. In each generation observations are made for disease resistance, shattering, lodging, and other characters. Any selection that fails to measure up in any respect is discarded. After making single plant selections for five or six generations the progeny from any plant will be reasonably uniform; in other words, its inherited characteristics will have become fixed, and the breeder can be fairly certain that any advantage it shows will be retained. Discarding up to this stage will have eliminated most of the original selections.

The few remaining strains represent the best selections from the cross. To determine which, if any, has the superiority required to become a new variety, they are tested in different areas of the originating state in comparison with the standard varieties for one or more years.

Uniform Testing

If any strain shows considerable promise in the state tests, it is entered in the uniform group tests conducted by the U. S. Regional Soybean Laboratory in cooperation with all the state experiment stations of the region. In these tests strains are grouped according to their maturity classification and are grown at many locations in the region where varieties of that particular maturity are adapted. Only those strains that prove outstanding in these tests for two or three years have a chance of becoming a new variety. Those superior in some respects but too poor in others to be considered for release may be used in crosses in the hope of making further progress.

When a new strain has proved to be definitely superior, the seed is increased, a name is chosen, and it is released to farmers. The foundation seed division and the certifying agencies then take over the responsibility of keeping the variety pure so that its superiority will not be lost by getting it mixed with other varieties.

The development of a new variety

is a long, complex process. Frequently 12 to 15 years are required from the time of the original crossing of two varieties until sufficient seed is available for release to farmers. The cooperation of the states in a regional uniform testing program under the direction of the U. S. Regional Soybean Laboratory at Urbana, Ill., permits such rapid evaluation of new strains that the time required to develop new varieties is reduced by two or three years. Regional cooperation insures all states the opportunity of benefitting from any progress made in the region. Farmers get improved varieties in the shortest possible time. Research and development of new varieties is coordinated so that the value received for each dollar spent is at a maximum.

Can't Predict Results

The chances of getting a desirable new variety from a certain cross cannot be predicted. Just as some sires nick with certain dams in livestock, so certain varietal combinations of soybeans seem to be better sources of desirable types than others. The possible different gene combinations, considering all 20 chromosome pairs in a cross between two different varieties, is an astronomical figure, no more easily conceived than the amount of our national debt. In the first place, it is impossible to grow enough plants to include all the possible combinations. In the second place, if they were all grown, variations in soil and other environmental factors would make finding the most desirable combination highly improbable.

But plant breeders do not expect to reach perfection immediately. Substantial progress has been and can still be made in all the characters considered desirable. New strains, by receiving the more desirable traits of both parents, should do better than the parental varieties on the average considering all characters. But new strains may be superior to either of the parents in certain aspects.

In oil content, for example, the new Adams variety is considerably better than either of its parents, Illini and Dunfield. Apparently these two varieties carry different genes affecting oil production, and Adams received some of the better ones from each, thus getting a more desirable gene complement in this respect than either parent had. Breeders make, observe, and discard hundreds of selections for each one that merits release as a new variety.

There can be no one perfect variety. Environmental conditions vary, and no one variety could conceivably be adapted everywhere. The length of the daylight period determines the time of blooming of soybeans. Keep the days long enough and no blooming will occur. Soybeans in the northern part of the United States are planted near June 1, when days are long but still getting longer. Growth is rapid in the long days. Days begin to shorten about June 21. When the critical day length is reached, buds form and flowering occurs. For varieties in Minnesota this occurs when day length is still greater than 15 hours. This is longer than any day of the year in Louisiana.

Thus if soybeans adapted to Minnesota conditions were planted in Louisiana, they would begin to bloom shortly after they emerged from the soil. On the other hand, a variety adapted in the South would not bloom until late in August, if planted in Minnesota and would be caught by frost. Soybean varieties, as a result of this photoperiodic condition, are adapted in rather narrow east-west bands where day lengths initiating floral development occur early enough in the summer to allow time for maturity before frost. Varieties differ in their range of adaptation. Hawkeye and Lincoln have proved to be widely adapted.

Nebraska Varieties

As a rule varieties which utilize the entire growing season yield more than those which do not. Our varietal recommendations are based on this fact for each area. Hawkeye is earlier and is adapted farther north than Adams or Lincoln. It is recommended for northeastern Nebraska where it utilizes all of the growing season. It is too late for any except the extreme southern counties of Minnesota. It is too early to yield as much as Lincoln in southeastern Nebraska. Lincoln, being about a week later in maturity than Hawkeye, may be caught by frost occasionally in northeastern Nebraska. Adams is in between Hawkeye and Lincoln in maturity. In Dodge county and the central part of Nebraska a farmer with a fairly large acreage might want to plant part to Adams or Lincoln in order to spread his harvest period a few days.

If very late planting is necessary in any area, choice of an earlier-maturing variety than would normally be grown is desirable. In northeastern Nebraska the new Blackhawk variety would be a good choice when seed becomes available. Hawkeye should be the choice for late planting in central and southern Nebraska.

In the process of testing new strains in Nebraska, an attempt is made to

DONALD G. HANWAY

grow them under the different conditions that exist in the state. The main part of the breeding work is carried on at Lincoln. In cooperation with the Outstate Testing Program one varietal test is grown each year in each of the following areas of the state: extreme southeast, east-central, northeast, and central irrigated. This distribution allows testing under a range of day length, climatic, and other environmental conditions. These tests provide the basis for varietal recommendations in the different areas.

Losses in yield in Nebraska due to diseases as yet are considered to be rather small. In some areas of the Cornbelt losses to brown stem rot and pod and stem blight have at times been important. Many other diseases that attack soybeans are known. Soybean breeders throughout the United States are in the process of developing resistant varieties or working out other control measures.

What diseases occur in Nebraska and what is being done to prevent their becoming very serious? Each year during the cooler part of the summer bacterial blight causes small, angular, yellow spots on the leaves that become dark brown to black and fall out making the leaves look ragged. Because of the cool summer in 1950, bacterial blight was more prevalent than usual. Hawkeye and some other varieties have considerable resistance to this disease. Lincoln, though very susceptible, was one of the highest yielding varieties in every test in the state last year. The resistance of Hawkeye will be incorporated into new varieties in the future.

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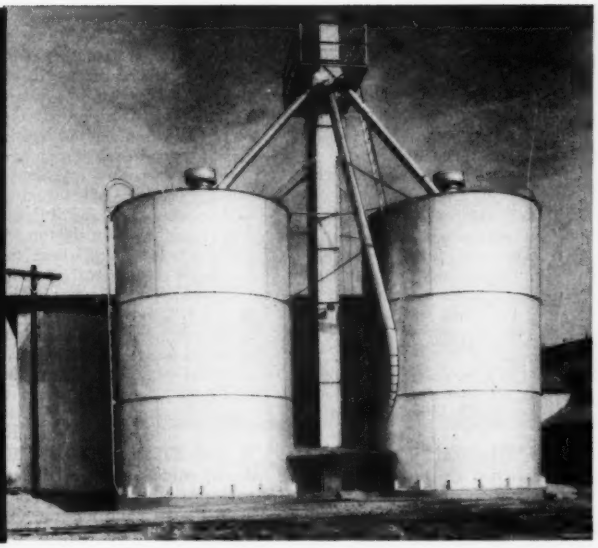

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mer a leaf spot disease known as bacterial pustule develops. Symptoms are somewhat similar to bacterial blight. The spots, however, frequently show a distinct "pustule" on the underside of the leaf. CNS, a southern variety, is highly resistant to this disease, and this resistance is being incorporated into strains that will mature in the Cornbelt.

Wildfire, another bacterial disease that sometimes causes leaf spots late in the season, occurs to a small extent in Nebraska. Sometimes in states farther south it practically defoliates circular areas in fields late in the season. As yet, no good source of resistance has been found.

Frogeye, a fungal disease causing leaf spots, has been moving northward and is now quite prevalent in Indiana and Illinois. It has not been observed as yet in Nebraska. Lincoln and some other varieties are resistant to frogeye. Hawkeye is susceptible.

Bud blight, a virus disease that causes "dudding," occurs regularly in Nebraska. In young plants it causes the tip to curl over, turn brown, and die. Infection in the later stages may cause the pods to become spotted and drop, the pith to turn brown at the nodes, and the plants to remain green instead of maturing normally. Some insect, as yet unidentified, apparently carries this virus because the disease seems to start at the edges of the field and to move inward. All varieties inoculated artificially have been susceptible. This disease is getting quite a lot of attention, but the prospects for finding a good control soon are small.

Brown stem rot is a fungus disease that usually produces symptoms late in August in the form of sudden yellowing and death of the top leaves of the plant. It occurs where soybeans have been grown too frequently in the rotation. A good rotation will control it.

Stem canker, a disease that kills scattered plants in the field during the period of pod formation, has been observed in Iowa. As yet no variety resistant to it has been found.

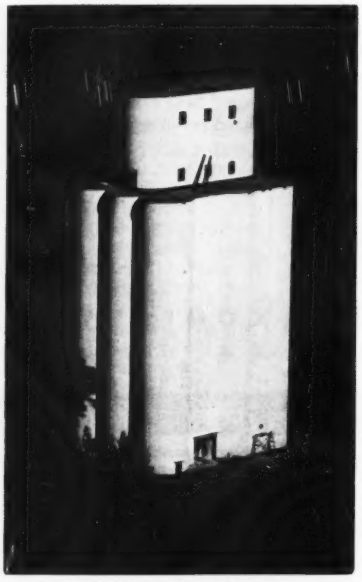
Other diseases being studied are soybean mosaic, pod and stem blight, downy mildew, powdery mildew, charcoal rot, other root rots, the purple stain disease, and anthracnose. Soybean breeders are hopeful that they can keep the disease situation from becoming serious. Farmers themselves can do little beyond planting recommended varieties and maintaining a good rotation. They certainly should report any unusual condition which develops in their fields so that the research people will be aware of anything new that is developing. Diseases change. A new race of a particular disease may be able to attack a variety that had been resistant to former races. This greatly complicates the problem.

At the Regional Soybean Laboratory supplies of seed of varieties from all over the world are maintained. When new diseases appear, all of these varieties are tested to find out whether they carry resistance that may be valuable in the breeding program. The search for varieties that may be valuable in future breeding work continues in all areas of the world where soybeans are grown.

Summary

Developing an improved soybean variety is a complex process that takes from 10 to 15 years. Such widely grown varieties as Hawkeye and Lincoln attest to the success of the breeding program conducted by the state experiment stations in cooperation with the U. S. Regional Soybean Laboratory.

In time the good varieties of today will be replaced by new ones which will be superior in yield, oil content, lodging resistance, disease resistance, and other important respects.



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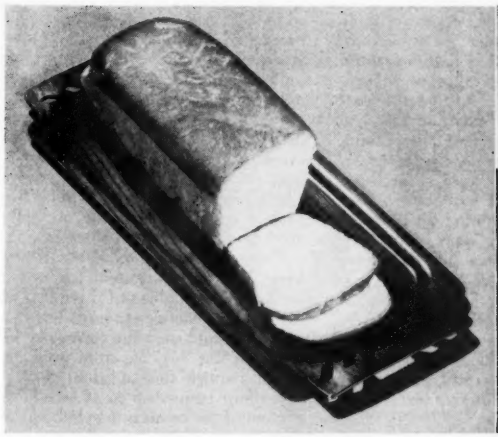

Present federal standards permit the use of 3 percent soy flour in white bread.

Defatted flours are designed for use in prepared pancake and doughnut flours and other bakery goods.

Edible Soy Flours and Their Uses

By W. F. GEDDES[1]

Division of Agricultural Biochemistry, University of Minnesota, St. Paul, Minn.

ALTHOUGH THE people of the Orient have used soybeans and soybean products as their chief source of protein for many centuries, the soybean has not occupied a prominent place in the diet of the American people. The domestic use of soybean flours from 1930 to 1940 averaged about 25 million pounds per year.

The shortage of animal proteins as a result of World War II focused attention on the high nutritive value of the soybean and stimulated efforts to produce more acceptable flours and other products for human consumption. The food shortages in Europe and Asia during the war led to a rapid increase in the U. S. production of edible soy products to a peak of some 400 million pounds per year.

Some export business continued after the war years but the production of edible soy flour dropped to about 100 million pounds in 1947. It is estimated that approximately 144 million pounds of edible soy flour were produced in the United States during 1950, mostly to meet domestic requirements.

Three general types of soy flour, *full-fat*, *low-fat* and *defatted*, are produced. In manufacturing full-fat soy flour no oil is removed; the cleaned, dried, dehulled beans are cracked, and heat-processed to remove the beany flavor, to increase the biological value of the proteins, and to inactivate certain enzymes which otherwise would cause rather rapid deterioration in storage. The processed beans are then cooled and ground, and the flour obtained by air-separation.

The initial processing steps in the manufacture of low-fat and defatted soy flours are essentially the same as for the full-fat type. Medium-fat soy flour is made from the press cake obtained by the continuous mechanical pressing method known as the expeller process, which lowers the oil content to about 5 to 6 percent. Defatted soy flour is made from meal obtained by solvent extraction of the oil and normally contains less than 1 percent fat.

Other Items

In addition to flours, edible soy meats, grits of various sizes and flakes have also been produced.

Aside from their nutritive value, the desirability of utilizing soy flours in food preparations depends on specific properties, such as their high water-absorbing and water-retaining capacity, the emulsifying action of the

Soy flour is bagged for shipment from the processing plant.

[1]Abstracted from the author's comments at a panel discussion on the Nutritional Value of Soybean Proteins, held at the Third Annual Tri-state Soybean Processors' Conference, University Farm, Saint Paul, Minn.

lecithin and their low-carbohydrate content.

Full-fat flours are employed principally in those types of bakery goods where their high-fat content and consequent shortening effects are desirable.

Low-fat flours find their most extensive use in the meat-packing industry as a binder in the manufacture of sausages and other prepared ground meat products; their purpose is to prevent crumbling and to increase moisture retention.

Defatted flours are designed for use in bakery goods (bread, rolls, biscuits,) prepared pancake and doughnut flours, breakfast cereals, macaroni products and dietary foods (prepared baby foods, flour and bread for diabetics.)

Large quantities of soy flours have been employed in dry soup preparations. Also edible soy flour is used for special livestock and poultry feeds as vitamin carriers and in calf feeds. A considerable amount is used in commercial pet foods.

It has been estimated that in recent years about 40 percent of the domestic sales of soy flour are consumed by the baking industry and about 20 percent by the meat industry.

It has long been recognized that soy proteins effectively supplement the wheat flour proteins because of their relatively high content of lysine and certain other nutritionally essential amino acids in which the wheat proteins are low. For the past several years considerable attention has been given to the possibility of improving the nutritive value of bread, macaroni, and other cereal products through the use of soy flours. Specialty breads containing up to 20 to 30 percent of soy flour have been made for some time but they have never enjoyed a wide sale. Such percentages result in the production of bread differing markedly in character from that made with white flour; the bread is lower in volume, darker in crust color and possesses a darker colored crumb of different texture and flavor.

Softening Action

The effects of soy flours on dough-handling properties and on bread characteristics depend on the amount of soy flour added and on the strength of the wheat flour with which it is mixed. Soy flour has a softening action in fermenting doughs and oxidizing improvers, such as potassium bromate which is widely used in the baking industry to improve the dough and bread properties. When appropriate oxidizing agents are used in sufficient quantity with a proper balancing of other baking factors, laboratory baking experiments have indicated that the replacement of as much as 8 percent of wheat flour with soy flour results in bread equal to that made entirely from the same flour except for crumb color. These results were, however, obtained with flours which were considerably higher in protein content than those normally used in commercial and home baking.

The new federal standards which have been promulgated for white bread permit the use of 3 percent of soy flour. Federal standards have also been established for various types of wheat and soy macaroni products which require the addition of soybean flour equivalent to at least 12.5 percent of the combined weight of the wheat and soybean ingredients.

It is realized by soy flour manufacturers that the present food uses of soy flour are not based primarily on their nutritive value but rather because they contribute some desirable properties. Any marked expansion of the domestic market for soy flours will depend on the success of researches directed towards improving their flavor and developing flours of uniform properties which have desirable functional effects for specific uses.

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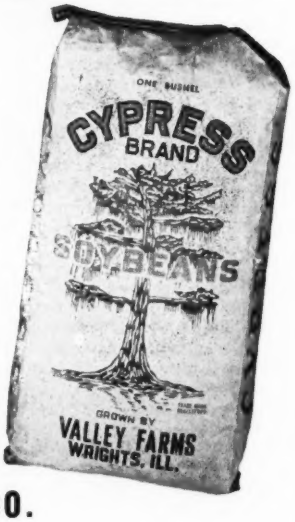
Our Cypress Brand Seed Soybeans are in the bins and preliminary tests indicate our usual highest quality seed. Our seed stocks are extremely low and we are already sold out of one variety. Please call or wire us for prices or other information.



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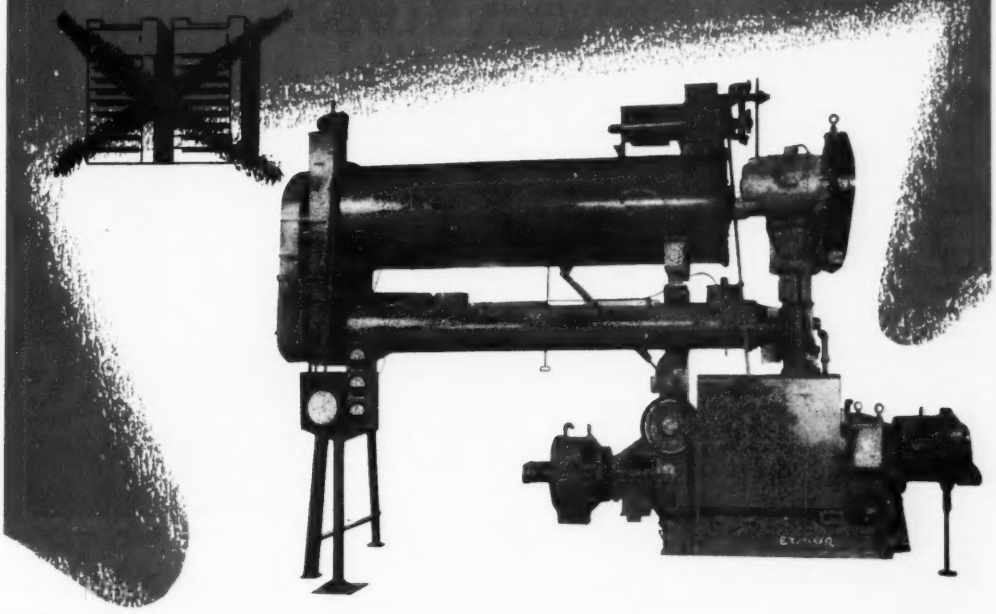

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High School Boy Remington Champion

Over 500 persons attended the annual banquet held as a part of the 14th annual Remington Soybean Show held at the High School building in Remington, Ind., Dec. 11. With ticket sales for the banquet limited to the above number, an additional 200 persons were admitted for the program which followed the banquet. Now famous for its ability to put out fried chicken in large quantities at a rapid rate, the delegation from the Remington Service Club which prepared the meal outdid itself this year by serving the entire 500 persons in 28 minutes.

The evening program, presided over by Dean Reed of Purdue University, consisted of the awarding of trophies and prizes to all winners in the show, the introduction of guests, and an hour of entertainment by a delegation from Radio Station WLS in Chicago, headed by "Red" Blanchard.

The afternoon program consisted of a talk by Geo. M. Strayer, secretary of the American Soybean Association, who discussed the place of soybeans in our world food economy, and a discussion of soybean production and harvesting led by K. E. Beeson, extension agronomist at Purdue University. Maynard Bertsch, Indiana field editor for Prairie Farmer, presided at the afternoon session.

A radio broadcast, featuring the Remington Band and Glee Club, was broadcast over WBAA, the Purdue station, at noon. Included also were short interviews with a number of the personalities involved in the staging, judging and program of the show.

Slightly smaller in the number of entries than the 1950 show, but with general quality of the samples rated as excellent, the official placings were made by Charles Bowman of the Purdue Agricultural Alumni Seed Improvement Association, and C. R. Schmidt of the Indiana Seed Certification Service. W. H. Shively, Vocational Agriculture instructor at the Remington High School was in charge of entries, and general manager of the show.

Jack Luck, Remington, was grand champion of the show and winner of the Farmers Cooperative Co. of Remington Trophy. He was champion of the vocational agricultural division and winner of the Hawkeye class.

Reserve champion was Loren Wilder, Remington, who was champion in the farmers division. Wilder entered Lincolns.

Other champions were:

Certified seed division, George Diener, Reynolds; open class division, Ralph Alter, Remington; junior agriculture division, Frank Howard, Remington; veterans divisions, Robert Blackwood, Remington; 4-H club division, Benton 4-H Club, Verlyn Wilken, Parish Grove Township; Jasper 4-H Club, Larry Tyler, Remington; White 4-H Club, Jim Hoover, Monticello; and Newton 4-H Club, Bill Reed, Jr., Kentland.

Winner of the five-acre soybean yield contest was Russell Hunter. His Hawkeyes went 42.7 bushels to the acre.

Willis Meekert was second with Hawkeyes that produced 39.7 bushels to the acre. Paul Laird was third with Hawkeyes producing 37.8 bushels to the acre, and Carl Fritz was third with Blackhawks that went 32.6 bushels to the acre.

Trophies were presented by Chester B. Biddle, president of the American Soybean Association, Remington.

Jack Luck, Remington soybean champion

OPENS MEMPHIS OFFICE

N. H. (Hunt) Moore, consultant engineer for solvent extraction cottonseed and soybean plants, has announced opening of his new offices at 1206 Sledge, Memphis, Tenn. Since Sept. 1, when he organized his own firm, the offices have been at Wilson, Ark.

Mr. Moore has been associated with the cottonseed and soybean industry since 1935. He became production manager of the Delta Products Co., Wilson, Ark., cottonseed solvent extraction plant six years ago, and was made general manager in 1950.

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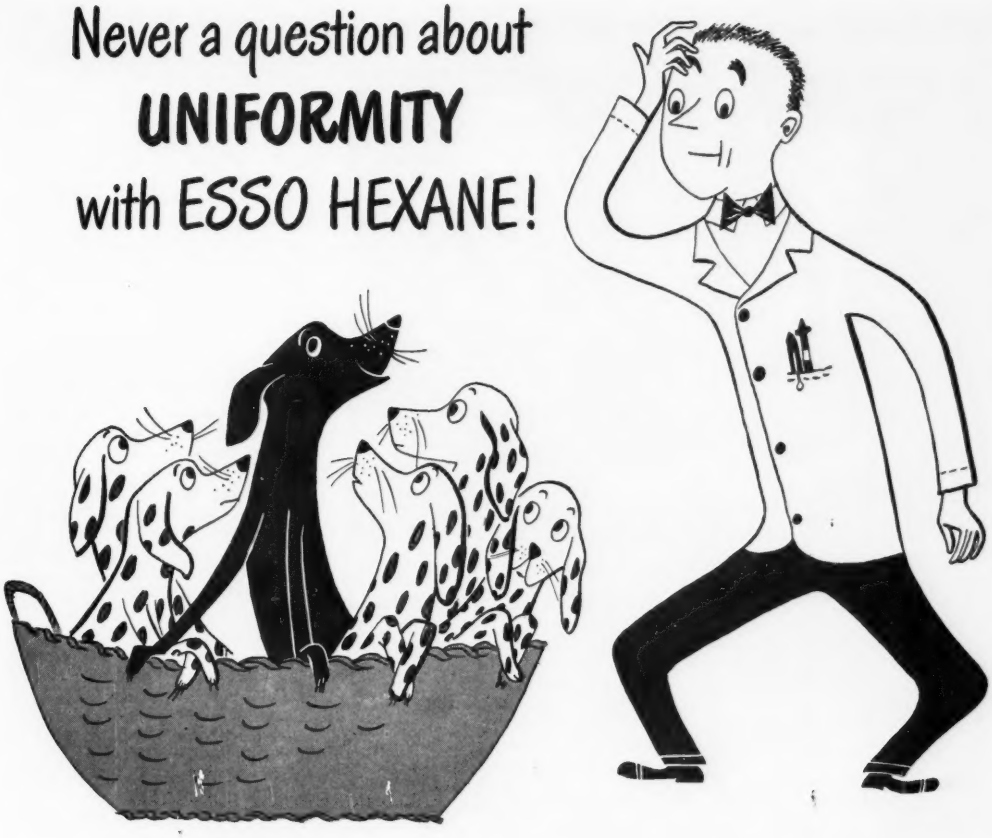

EXACTING modern refining treatment gives Esso Hexane a *narrow boiling range* and closely controlled *uniformity* . . . assurance of a pure, dependable solvent.

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- **PURITY** — high purity helps prevent non-recoverable residues. Low non-volatile content (specification limits the non-volatile content to 28 parts per million parts.)
- **MODERN HANDLING METHODS**—separate tank storage, pumping lines, tank cars and trucks are used in all Esso Solvent handling operations. Prompt efficient delivery to your doorstep is assured.
- **MULTI-STORAGE AVAILABILITY** — water terminals in industrial centers.

Controlled high quality helps produce larger profits with versatile, dependable Esso Solvents.

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If you have a solvents problem or want further information on the specifications and characteristics of Esso Hexane — write or call our office nearest you. Our technicians will be glad to assist you.

50th Anniversary for Butler Mfg. Co.

John A. Morgan (left) and Oscar D. Nelson.

A surprise announcement of a new general manager, the unveiling of new production facilities and office quarters, and payment of employees in $2 bills highlighted a three-day series of open house tours by the Butler Manufacturing Co. at Kansas City, Mo. The event was held Dec. 6, 7 and 8.

Occasion was the observance of the 50th anniversary of the founding of the company. Some 5,000 residents of Greater Kansas City and industrial leaders from various parts of the country were guests of the company during the celebration.

The announcement of the appointment of John A. Morgan to the post of general manager was made by Oscar D. Nelson, president. Morgan's rise to a top management position spans a career of a little more than 12 years with the company. He is a native of Wichita, Kans., a graduate of Wichita University, and of the Harvard School of Business Administration. He joined Butler to work in the sales and advertising department.

In his new position Morgan will be making the policy decisions affecting all phases of the company's operations. Nelson and Morgan will continue to work closely together with Morgan taking on added responsibilities, Nelson explained. At 36 Morgan probably is one of the youngest men ever to attain the top executive position of a leading national industrial firm.

He will be at the helm of a company which has nearly 3,000 employees with plants in Minneapolis, Minn.; Galesburg, Ill.; Richmond, Calif.; and Birmingham, Ala.

The company produces steel grain bins, watering tanks, buildings, truck tanks, aircraft refuelers, oil field equipment, dry cleaning equipment, and an extensive list of special metal products.

As a means of bringing the 50th anniversary to the attention of Kansas Citians, the Butler employees were paid in $2 bills. It is expected that these bills will circulate through the hands of a large number of Kansas Citians, demonstrating the widespread effect of the company payroll upon the community.

The payment of employees in $2 bills was a part of the celebration in each of the other branch cities.

— s b d —

CASTOR BEAN CROP DOWN

World castor bean production in 1951, now estimated at about 430,000 tons, represents a slight decrease from the 1950 level, according to a preliminary estimate based on information available to the Office of Foreign Agricultural Relations.

Sharp reductions in Brazil and India, the principal sources of supply, may be nearly offset by a possible increase in production in the Soviet Union and by the castor bean production program initiated this year in the United States. Nevertheless, world availabilities as far as the United States and world trade in general are concerned are expected to be some 20,000 tons short of last year's supply, because of the poor crops in Brazil and India.

Castor oil is a strategic oil consumed in large volume for varied military and other purposes in the United States. It is used in jet-engine lubricating oil and other aircraft lubricants, hydraulic fluids, military all-purpose grease, and plastic-coated combat wire, all of which are important for military purposes.

Castor oil also is used as a plasticizer in the manufacture of military fabrics and explosives.

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Here at Archer-Daniels-Midland, the optimism regarding soybeans is almost unlimited. For one thing, ADM has had a large part in developing today's soybean products and markets. For another, it is ADM's job to look ahead, and plan ahead, along the paths of chemical research, product development, and marketing.

In 1951, ADM's great modern processing plants are converting soybeans into many unusual products. All are making vital contributions to American living. And our laboratory chemists report that some of the biggest soybean stories have yet to be written.

What next, from this exciting crop? No one can say specifically . . . but we can promise that the future for soybeans is bright, indeed.

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OPS Turns Down $79 Price on Meal

Office of Price Stabilization on Dec. 18 declined to approve a settlement price of $79 a ton, $5 above the ceiling, on defaulted November futures contracts on soybean oil meal. The Chicago Board of Trade fixed the $79-a-ton price Dec. 3 subject to OPS approval.

Harold Leventhal, OPS chief counsel, stated that section 707 of the Defense Production Act precludes the establishment of a settlement price for default on futures contracts above the spot ceiling price for the commodity.

"To require a person defaulting to pay damages based on a market value in excess of the ceiling price would be to assume as a basis for settlement an illegal market price," Leventhal declared.

However there may be some cases where a commodity exchange or court may require persons defaulting on delivery under futures contracts to pay damages actually incurred and directly attributable to the default, Leventhal said. In such cases there would have to be an actual showing of such damages.

Defaults occurred on 37 November futures contracts totaling 3700 tons of soybean oil meal due to nondelivery of the meal. It was said that the defaults were the first to occur at the board of trade in five years. There were defaults on corn contracts in May 1946 under conditions similar to the present situation in soybean oil meal.

Directors of the board of trade adopted a regulation limiting trading in the December soybean oil meal futures to liquidation of purchases and sales already made. An exception was that anyone having meal of approved market quality might sell it for delivery purposes on a December futures contract. They adopted a similar limitation on January futures trading.

Soybean processing and feed industry interests informally recommended to OPS in December that soybean oil meal price ceilings be raised. They said expeller plants were unable to operate profitably under the present price levels and many had closed down. Processors said they were slowly being strangled between an unprofitable soybean-oil-meal-soybean-oil price combination and the price for beans.

—sbd—

BOOK ON PHOSPHATIDES

Dr. Harold Wittcoff, head of the product development section, General Mills Research Laboratories, has authored a technical book entitled "The Phosphatides," released by Reinhold Publishing Corporation in December.

Dr. Wittcoff has been with General Mills since 1943. His research there has centered on the development of phosphatides, polyhydric alcohols, drying oils and resinous products.

"The Phosphatides," a 554-page book, is American Chemical Society Monograph No. 112. It describes and interprets the nomenclature, isolation, structure proof, properties, synthesis, physical chemistry, enzymic relationships, analysis, sources, biochemistry, medical aspects, metabolic relationships and commercial uses of all known phosphatides.

DR. HAROLD WITTCOFF

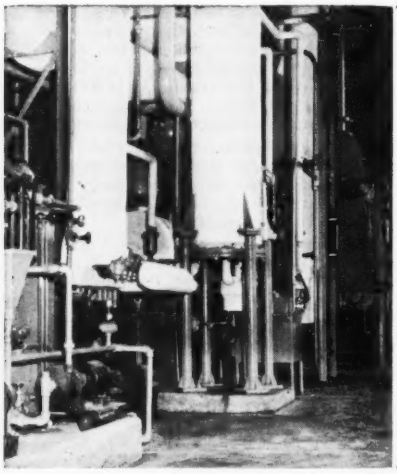
During his nine years with General Mills, Dr. Wittcoff has published extensively. He now has 10 scientific papers listed in "Chemical Abstracts" and has written at least six other important publications.

—sbd—

VICTORY MILLS TROPHY

Victory Mills, Ltd., Toronto, Ontario, has donated a magnificent perpetual challenge trophy to be awarded annually to the grand championship exhibit of soybeans at the Royal Agricultural Winter Fair in Toronto, according to the Fair catalog.

The Royal Agricultural Winter Fair offers two soybean classes for residents in all parts of Canada, one for early maturing varieties, and the other for any variety other than early.



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A Crown safe solvent extraction plant in a soybean producing community gives each farmer an opportunity to deliver his beans to the plant and take home from that same plant the high protein meal needed to economically feed his livestock and poultry. Thus, the plant saves freight and handling charges on the beans processed and eliminates freight on the return of the meal.

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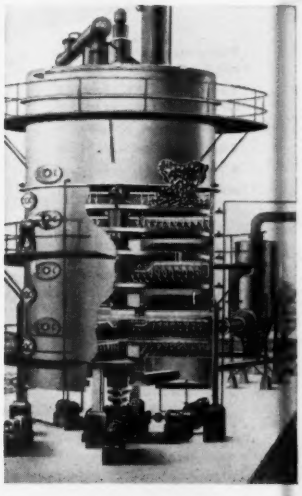

BLAW-KNOX ROTOCEL—the unit that established an entirely new trend in soybean processing! Available in 50 to 500 tons daily capacity. Also BLAW-KNOX PRESSED CAKE PLANTS . . . VAPOR DESOLVENTIZERS . . . TOASTERS . . . FLAKING ROLLS . . . DISTILLATION UNITS

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1951 Margarine Sales Billion Pounds

For the first time in any year, margarine production reached the 1-billion-pound mark during December, it was announced by S. F. Riepma, president of the National Association of Margarine Manufacturers.

Total production was approximately 940 million pounds on Nov. 30, and the Association estimated production in December would be around 100 million pounds.

The previous high for a single year was 937 million pounds in 1950.

More than three-fourths of all margarine produced last year was colored yellow. The previous year 499 million pounds, or about 53 percent of total production was yellow. In 1949, only 177 million out of a total of 861 million pounds was pre-colored.

"The trend toward yellow is the direct result of the repeal of federal and state anti-margarine laws within the past 18 months," Riepma said.

"Today the sale of tax-free yellow margarine is permitted in 40 states and the District of Columbia. Only eight states—New York, Vermont, Iowa, Wisconsin, Minnesota, South Dakota, Montana and Washington—ban the sale of yellow margarine."

The estimated per capita consumption of margarine for the current year is 6.7 pounds, also a new record, according to Department of Agriculture statistics.

In the past 15 years, margarine consumption per person has more than doubled; in the 1935-39 period it was only 2.9 pounds. Butter consumption per capita has decreased from 17.1 pounds in 1935 to an estimated 9.7 pounds in 1951.

Last year approximately 820 million pounds of domestic fats and oils were used in margarine production. Margarine is the second largest outlet for both cottonseed and soybean oils, which make up about 95 percent of the product's total fats and oils contents. An estimated 771 million pounds of these two ingredients were used for margarine in the past year. In 1950, 430 million pounds of cottonseed oil and 306 million pounds of soybean oil went into margarine.

— s b d —

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- Unloads all sizes of Trucks and big Tractor Trailers.
- Sizes—40′, 45′ and 50′ Platforms. Other sizes special.
- Capacities to 100,000 lbs.
- Scale and Non-Scale Types.
- TWIN Hydraulic Power Units.
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This New KEWANEE Pitless Model cuts foundation costs to a minimum.

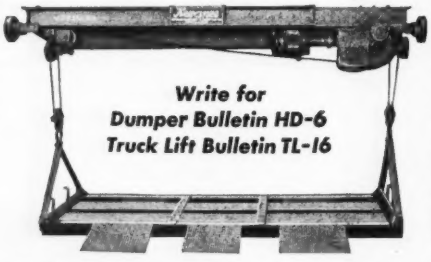
UNLOADS all sizes of Trucks and big Tractor Trailers in a "jiffy." Takes all the time-stealing hard work out of unloading...eliminates waiting time and keeps trucks "on the go."

Evidence of KEWANEE performance and economy is overwhelming. It is substantiated by successive repeat orders from outstanding firms who have installed them in all their plants.

One elevator reports unloading over 1,000,000 bu. of grain in one month's operation with a two man crew, averaging over 100 trucks each working day.

Every Trucker and Grower is a real booster. They appreciate "no long waiting in line" in busy harvest seasons and they tell others. It attracts new customers, widens your territory and expands your volume.

WRITE FOR BULLETIN — find out how KEWANEE will cut your unloading costs.



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- Adjustable for Driveways 11′ to 15′6″ widths.
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- Large, deep flanged Winding Drums. Uniform winding.
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ENGINEERED for easy operation and dependable performance, backed by 31 years' know-how in the grain trade.

Extra strength channel steel frame provides rigid support for operating mechanism. All working parts are below the frame, permitting maximum lift.

Telescoping frame adjustable every 2″ for driveways 11′0″ to 15′6″. New heavy duty Cradle of greater strength and utility. Strong lifting cables.

Whatever your unloading problem, there's a KEWANEE adaptable to it. We manufacture many different models to meet any condition.

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INTERCHANGEABLE

As a V-belt sheave manufacturer and roller chain sprocket distributor, the need for an interchangeable hub sprocket has long been apparent to Fort Worth Steel and Machinery Co. This firm has developed a sprocket to fit its "QD" V-belt sheave hub so that distributors can give immediate "off the shelf" service without reboring on sprockets as well as V-sheaves.

The "QD" sprocket is taper-bored to receive the tapered hub. Bolts are provided to pull the sprocket onto the tapered split hub for a tapered drive assembly and a positive press fit on the shaft. Tapped holes in the sprocket permit the use of the pull-up bolts as jack screws to break the tapered fit when dismounting the sprocket. Set screw over the keyway holds key in position.

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STRAYER

(Continued from page 15)

however, for continuing basic research, and in it we will see many developments during coming years.

Now the most plentiful protein in American agriculture, there is still much research work to be done toward the development of new industrial usages for soybean oil meal and the protein isolate. Proteins have unique properties that have not been duplicated by synthetic products. While research has not yet developed a textile fiber from proteins that can compete in the present market, the past research in this field has pointed out great possibilities in this market.

Regenerated protein fibers have properties that so far have not been obtained in any of the many synthetic fibers. Some of these properties resemble those of wool, and the blending of the regenerated protein fibers in textile manufacture is still a very promising future outlet for soybean protein. The market for textile fibers is enormous, and textile experts have estimated that 40 to 50 million pounds of regenerated protein fiber could easily be absorbed in the present textile market each year.

Warp Sizing

Warp sizing used to protect threads in weaving offers another large potential outlet for soybean protein. Some authorities have estimated that as much as 13 million pounds of soy protein might be used annually in the sizing of the various synthetic fibers, such as acetate and viscose. Carpet sizing is another field of usage, and the sizing of window shades is still another. Both offer great room for expansion.

Proteins, of course, are natural adhesives, and it would appear that we can look forward to continuing developments of the usage of soy proteins in this field. The combination of water resistance and exceptionally strong adhesive bond which is responsible for the wide use of soy protein in the plywood production industry makes that same soy protein useful in a wide array of other adhesives. Soybean glue for the plywood industry during the past year has utilized over 4 million pounds of soy protein each month, now makes up one of the major industrial markets.

Several of the recent developments in protein adhesives indicate a widening market in this field for soy proteins. Usage in the laminating of fiber board has the possibility of expanding to several times its present level, and appears to offer a much larger market in the lamination of a wide variety of paper products, such as fiber drums, paper cups, milk containers and other food and industrial packages. Here, again, we have merely scratched the surface and are faced with an ever-widening vista of developments.

Soybean protein is now being extensively used in the production of wallpapers, especially the washable types. It has been estimated that fully 90 percent of all the washable wallpaper marketed in the U. S. today is made with soy protein. A high percentage of the papers made for offset printing, where a water-resistant coating is needed, are now made with soy protein, and there is an ever-increasing market for soy protein in the manufacture of coated book and magazine papers. As higher percentages of the paper are produced by the new high speed machines, where the soy protein coating is applied during the paper manufacturing process, this usage is expected to increase. Most papers used for fine printing are coated with pigments to assure good reproduction, and soy protein is used as adhesive to bind these pigments to the paper fibers.

Also, practically all grades of paper with the exception of toweling, blotting and other similar types are sized in the process of manufacture to make them resistant to the penetration of liquids and moisture. The degree of sizing given each grade of paper depends upon its end usage. The usual method of sizing consists simply of adding a sizing material to the pulp while it is being beaten. The material adheres to the pulp fibers in the fabrication of the sheet on papermaking machine. Rosins have traditionally been used, but it has been found that the addition of soy protein greatly increased the efficiency of the rosins, reduces costs and produces a better sheet. Over 40 paper mills are known to be using soy protein in this operation now, and there is still a great field for increased usage in the sizing of paper and paper pulp products. With rapidly expanding fields of usage for paper products this would appear to be one of the most promising of the fields of expansion for soy protein.

Soy protein and protein products are today being used in the application of spray materials as a spreader-sticker agent, as suspension agents for insoluble materials, as adhesives and binders in the manufacture of floor coverings, insulating boards, and other products. Current trends in the manufacture of insulating boards call for a tough washable coating on the exposed surface, and soy protein products are used extensively in that industry.

One of the significant developments in the paint field during the past decade has been the introduction of water-thinned paints utilizing huge quantities of soy protein. Since the first products were introduced many new techniques have been worked out, and improved products have been introduced. The water-paint industry is today one of the large industrial markets for soy protein, and one of the markets which offers continuing possibilities of expansion. New products of this type are being

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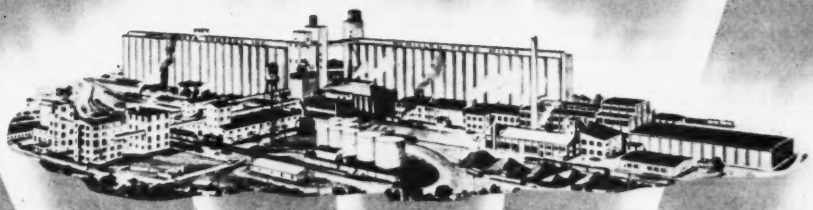

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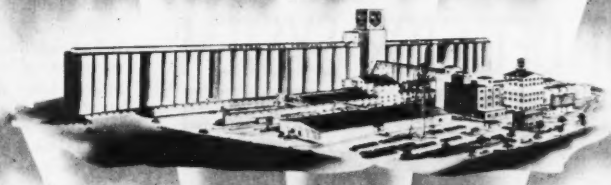

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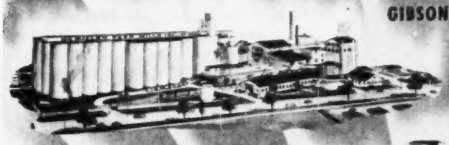

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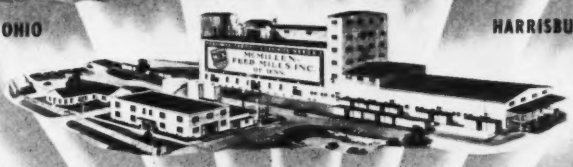

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studied, and offer much promise.

There are, of course, a host of other chemurgic and industrial products being marketed today in which soybeans play an important part. Such things as the work being done by Dr. Percy Julian in the production of hormone products offer a fascinating future, and serve to focus attention on the fact that the soybean, because of its unique combination of high protein and oil contents, offers one of the greatest storehouses of development available to man today. I can touch on only a very few of those fields of usage. I have omitted many, some of the perhaps very important, others which offer fields of expansion which will become of increasing importance.

The soybean is relatively new. Soybean oil has been with us only a relatively few years, and we are only beginning to learn about it and its uses. Soybean oil meal, likewise, is relatively new to America. Through the years we have learned about cottonseed oil and cottonseed meal, and we have learned about linseed oil and linseed meal. Given time, we will learn much more about the soybean crop, its derivatives and how to use them.

In a period of a few short years we have increased the production of the soybean crop each year until it is the major producer of both oil and protein in America today. Each year as we have done so there have been those persons who have felt that we had about reached the upper limits of usage, and who have wondered if markets would be available. During the 1950 year, when we produced 50 million bushels more soybeans than ever before in history, many of us wondered if our nation was ready to absorb so large a crop. Yet today soybean oil is selling at prices above ceilings maintained during the years of World War II. And the greatest tonnage of soybean oil meal in history is today being utilized by our rapidly increasing livestock populations and no one has lacked for a market.

What is ahead? The whole field lies ahead. The developments to date in usage of the soybean crop have merely been exploratory. Each day, as we learn more about the basic makeup of the soybean, its oil and its protein, wide new fields of usage appear to open up. The heyday of the soybean lies ahead, and it will not be many years until we will be producing and utilizing through increased developments crops of 400 million and 500 million bushels of soybeans per year.

— s b d —

RECORD PROTEIN SUPPLY

The 1951-52 supply of high-protein feeds of nearly 14 million tons is the largest on record and is one-third larger than the amount fed five years ago.

So reports S. W. Terrill, University of Illinois representative on the feed survey committee of the American Feed Manufacturers Association. This group recently reviewed the supply and demand for feeds for the period from October of this year through next September.

Total supply of grains and other concentrates available for livestock feed for the 1951-52 feed year will be nearly 137 million tons. That's about 9 percent more than the amount fed in 1950-51.

Supply of grains and low-protein by-products is 10 percent larger this year than last; and the supply of high-protein feeds, on an oil meal equivalent basis, is up 3 percent.

The 1951 crops of corn, oats, barley and grain sorghums were about 6 million tons smaller than those of last year. But larger inventories on hand last fall brought total supplies of these grains for 1951-52 above last year.

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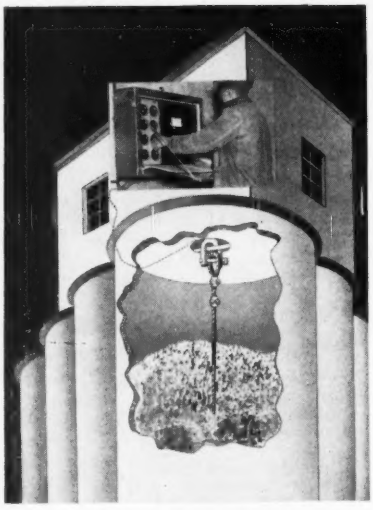

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1951 U. S., World Soy Crops Are Down

The 1951 soybean crop is estimated at 280.5 million bushels, the crop reporting board of the U. S. Department of Agriculture reports in its annual crop summary issued Dec. 17. This is almost 3 million bushels higher than the month-earlier estimate of 277.6 million bushels.

Soybean production in 1951 was the second highest of record. The estimated crop this past year is 6 percent less than the record 299.3 million bushel revised production in 1950. The reduction in production from last year resulted from both a smaller harvested acreage and lower harvested yields per acre.

The 1951 U. S. yield of 21.2 bushels per acre is 0.5 bushel less than last year but well above the 10-year average.

A total of 15.4 million acres of soybeans were planted for all purposes in 1951. This is only 2.3 percent less than last year's record acreage of 15.7 million. Of the total acres planted this year, 85.9 percent were harvested for beans, 6.4 percent for hay and 7.7 percent for all other purposes. The percentage harvested for beans in 1951 was below last year because of a larger diversion to "other purposes" most of which was actually abandoned acreage.

The 13.2 million acres harvested for beans was the second highest of record, being exceeded only by the 13.8 million acres harvested in 1950.

The growing and harvesting season in 1951 showed a wide variation by states and even within states. In much of the main producing area, especially Illinois and Indiana, the crop made a good start and conditions continued favorable throughout the growing and harvesting season. Other states and areas did not fare so well. Early drought in the South delayed planting and later rains caused many fields to become weedy. The Mississippi River floods in late June and early July caused considerable damage. Later, drought reduced yields, mainly in Ohio and the southern states.

The North Central states produced about 241 million bushels of soybeans this year, 17 million bushels less than these same states produced last year. Illinois alone had a crop of 95 million bushels, only slightly less than the record of 96 million bushels in 1950. In that state the season, with minor exceptions, was near ideal and the bumper harvest was practically completed by Nov. 1. Indiana also had an excellent season, although dry weather reduced yields in some localities. Harvest was completed with little difficulty.

Iowa and Missouri each had considerable damage from floods and wet weather. Harvesting was delayed in these states by cold, wet weather and on Dec. 1 a considerable proportion of the crop still remained to be harvested, especially in Missouri.

The South Atlantic states generally had a good season although droughts in August and September cut yields in some sections. The South Central states, with the exception of Ken-

SOYBEANS FOR BEANS***

State	Acreage harvested* Average: 1940-49	1950	1951	Yield per acre 1951	Production Average: 1940-49	1950	1951
	Thousand acres			Bushels	Thousand bushels		
N. Y.	10	7	7	18.0	154	126	126
N. J.	11	19	20	16.5	174	390	330
Pa.	24	24	22	17.0	359	420	374
Ohio	942	1,090	1,124	19.0	18,552	24,525	21,356
Ind.	1,298	1,652	1,551	23.5	25,013	37,170	36,448
Ill.	3,184	3,989	3,637	26.0	68,424	95,736	94,562
Mich.	96	114	120	20.5	1,593	2,280	2,460
Wis.	35	33	44	14.5	497	462	638
Minn.	444	1,148	1,077	17.5	7,221	17,794	18,848
Iowa	1,550	1,930	1,512	21.5	30,709	42,460	32,508
Mo.	584	1,209	1,290	20.0	9,730	27,807	25,800
N. Dak.	§ 8	41	28	13.0	§ 86	430	364
S. Dak.	19	70	60	14.5	260	875	870
Nebr.	27	50	58	22.0	436	1,200	1,276
Kans.	177	397	401	14.5	2,050	7,146	5,814
Del.	36	63	61	14.5	465	882	884
Md.	32	67	77	16.0	439	1,139	1,232
Va.	83	152	166	18.0	1,277	2,888	2,988
W. Va.	1	1	1	14.5	14	15	14
N. C.	232	297	300	16.5	2,921	4,752	4,950
S. C.	15	62	83	12.5	132	744	1,038
Ga.	12	26	21	10.5	83	286	220
Fla.		7	8	18.0		133	144
Ky.	79	126	130	19.0	1,293	2,205	2,470
Tenn.	54	168	183	17.5	877	3,528	3,202
Ala.	33	73	88	18.0	468	1,387	1,584
Miss.	97	358	425	14.0	1,362	8,950	5,950
Ark.	224	581	607	20.5	3,506	12,492	12,444
La.	29	37	33	17.5	378	666	578
Okla.	7	23	77	13.5	60	391	1,040
U. S.	9,348	13,814	13,211	21.2	178,567	299,279	280,512

* Equivalent solid acreage. (Acreage grown alone, with an allowance for acreage grown with other crops.) §Short-time average. ***USDA crop reporting board.

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tucky, had lower yields than last year. Mississippi was especially hard hit by early drought, then wet weather which prevented cultivation of those already planted, and then another period of dry weather which reduced yields on the late planted acreage. The average yield per acre in that state was only 14 bushels compared with the record 25 bushels per acre harvested last year. Arkansas, the heaviest producer in the area, had about the same production as in 1950, but this came about because of a 4 percent increase in acreage as the yield, at 20.5 bushels per acre, is one bushel less than in 1950.

World Report

Soybean production in 1951 may be near 650 million bushels, according to information available to the Office of Foreign Agricultural Relations, U. S. Department of Agriculture. This is somewhat less than last year's record crop now estimated at 654 million bushels.

Soybeans are grown on some scale in a great many countries throughout the world and estimates for 40-odd countries are included in the above totals. At the same time there are relatively few countries in which soybeans are of real commercial importance. About 90 percent of the entire world crop is concentrated in the United States and China (including Manchuria). Thus there are no third areas of comparable importance. Korea, Japan, and Indonesia hold the next positions but together account for only 5 percent of production. Canada, the Soviet Union, and Brazil apparently are the only other countries which produce as much as 1 million bushels.

These peculiarities of the geographical distribution of soybeans make it extremely difficult to arrive at reliable production estimates for 1951. Official production records are generally lacking for countries where soybeans are of minor commercial importance and more than half the commercial area lies in that part of the world for which recent reports are incomplete or unavailable.

Because of the greater reliability of estimates from the non-communist area, a subtotal has been included in the accompanying table for the non-communist countries. This shows an estimated 1951 production of 313 million bushels against 321 million last year and a prewar average of 87 million bushels.

The estimated decline of 8 million bushels from 1950 is largely explained by the shorter crop in the United States compared with last year. Likewise the sharp increase from prewar is largely explained by the rapidly expanding soybean industry in the United States. On a percentage basis, soybean production also has been expanding rapidly in Brazil and Canada. Both countries more than doubled production between 1948 and 1951.

With minor exceptions, only the United States and Manchuria are expected to be on an exporting basis for 1951-crop beans. While Manchuria produces fewer soybeans than China proper, the crop prospects in Manchuria are of particular significance to world trade. Based on fragmentary information but substantiated

SOYBEANS: Acreage, yield per acre, and production in specified countries and the world, average 1935-39, annual 1948-51*

Continent and country	Acreage†			Yield per acre			Production		
	Average 1935-39	1950	1951‡	Average 1935-39	1950	1951‡	Average 1935-39	1950	1951‡
	1,000 acres	1,000 acres	1,000 acres	Bushels	Bushels	Bushels	1,000 bushels	1,000 bushels	1,000 bushels
NORTH AMERICA									
Canada	§ 10	142	176	20.7	23.4	22.5	§ 207	3,323	3,962
United States†*	3,042	13,291	13,102	18.5	21.6	21.2	56,167	287,010	277,890
EUROPE									
Bulgaria	34	—	—	12.1	—	—	416	—	—
Hungary	** 7	—	—	16.9	—	—	**125	—	—
Italy	†† —	2	1	12.1	17.5	24.9	§ 1	29	31
Rumania	§ 49	—	—	9.5	—	—	§463	—	—
Yugoslavia	5	—	—	11.8	—	—	71	—	—
U. S. S. R. (Europe and Asia)	** 607	—	—	—	—	—	**5,805	—	—
ASIA									
Turkey	** 1	5	6	29.0	13.4	12.5	** 37	66	77
China proper (22 provinces)	12,411	—	—	16.7	—	—	207,666	—	—
Manchuria	8,992	—	—	16.8	—	—	151,294	—	—
Japan	797	750	—	15.6	15.8	—	12,338	11,864	11,000
Formosa	§ 17	—	—	8.9	—	—	§ 151	—	—
Korea‡‡	§ 1,921	—	—	10.0	—	—	17,654	—	—
Indonesia***	889	808	880	10.9	11.1	10.7	9,731	9,002	9,450
SOUTH AMERICA									
Brazil¶¶	—	—	—	—	—	—	—	1,323	1,860
AFRICA									
Tanganyika	—	—	—	—	—	—	—	31	19
Union of South Africa	—	—	—	—	—	—	—	40	50
Total non-communist area	5,670	15,960	15,920	—	—	—	87,190	320,600	312,570
World total***	29,000	36,470	36,890	—	—	—	463,720	653,900	650,040

Years shown refer to years of harvest. Southern Hemisphere crops which are harvested in the early part of the year are combined with those of the Northern Hemisphere harvested the latter part of the same year. †Figures refer to harvested areas as far as possible. ‡Preliminary. §Average of less than 5 years. † Acreage harvested for beans. **One year only. ††Less than 500 acres. ‡‡Beginning with 1948 figures represent South Korea only. *** Java and Madura only. ¶¶Rio Grande do Sul and Sao Paulo. ***Includes estimates for the above countries for which data are not available and for minor producing countries.

Office of Foreign Agricultural Relations. Prepared or estimated on the basis of official statistics of foreign governments, reports of U. S. Foreign Service officers, results of office research, or other information. Prewar estimates for countries having changed boundaries have been adjusted to conform to present boundaries, except as noted.

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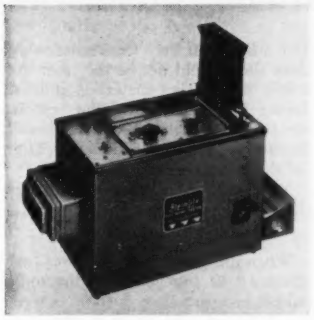
from different sources, production there has recovered progressively since 1949 and the 1951 crop is probably well over 100 million bushels.

SOYBEANS FOR HAY

State	Acreage harvested Av. 1940-49	Acreage harvested 1951	Soybean or Prod. Av. 1940-49	Soybean or Prod. 1951	Grazed or Plowed Under Av. 1940-49	Grazed or Plowed Under 1951
	Thousand Acres		Thousand tons		Thousand Acres	
N. Y.					2	2
N. J.	17	9	26	14	6	10
Pa.	41	17	64	28	13	4
Ohio	122	18	179	24	42	17
Ind.	250	83	327	120	45	25
Ill.	327	67	420	94	73	34
Mich.	18	4	24	7	26	4
Wis.	55	13	97	22	13	6
Minn.	67	13	108	18	27	50
Iowa	151	15	237	21	38	41
Mo.	134	28	175	38	91	100
N. Dak.	*1	2	*1	2	*1	1
S. Dak.	2	1	2	1	2	2
Nebr.	3		4		4	2
Kans.	16	5	24	7	19	89
Del.	17	6	20	8	7	2
Md.	38	12	51	17	10	6
Va.	67	34	80	44	59	48
W. Va.	29	8	44	13	4	2
N. C.	168	132	189	158	154	99
S. C.	29	21	27	21	41	61
Ga.	53	30	49	27	47	63
Fla.						2
Ky.	106	70	161	98	24	20
Tenn.	124	99	162	119	155	99
Ala.	187	66	172	59	45	16
Miss.	188	127	227	152	154	83
Ark.	112	74	126	85	121	60
La.	53	10	66	11	254	210
Okla.	7	24	8	28	7	19
Tex.	7	1	5	1	7	2
U. S.	2,388	989	3,077	1,237	1,491	1,179

* Short-time average.

MODEL 400G STEINLITE



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NEW B S & B DEPARTMENT

M. G. Purpus, sales manager, special products division of Black, Sivalls & Bryson, Inc., fabricators of steel products, announces the formation of an agricultural department to handle the sale of all farm products manufactured by the company.

The new department will feature the BS&B Perfection line, with emphasis on grain storage and grain drying equipment. Included among the products will be the well-known BS&B Perfection grain bin, BS&B grain tanks, and the BS&B drying floor.

Markets for BS&B farm products have, in the past, been confined primarily to the Midwest and Southwest. Future plans, however, call for expansion of the sales organization to include distribution on both the East and West coasts.

Paul Lowry, who has handled the sale of BS&B grain tanks for the past three years, will head up the new department.

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and saw your need for these

2 new SHANZER ECONOMY GRAIN DRIERS

"YOUR ALL-WEATHER CROP INSURANCE"

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The new SHANZER **"Economy 10"** has a drying capacity of **150 bushels per hour.** Completely prefabricated for easy erection; steel enclosed for outdoor installation. Incorporates all basic SHANZER Drier principles of low temperature air, free-flowing grain columns.

"30"

The new SHANZER **"Economy 30"** handles up to **600 bushels per hour!** Large capacity at low operating cost! Completely prefabricated for easy erection outdoors . . . plus all the famous SHANZER Drier features!

SHANZER BERICO Grain Driers are custom-designed for capacities up to 1000 bushels per hour, indoor or outdoor installation. Write for FREE folders on any or all of these outstanding Grain Driers today!

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A Missouri View on Grading Standards

To the Editor:

There is a matter that we have had in mind for a number of years, and in fact have attended some hearings on grades, with the idea of trying to get to a more satisfactory grade basis. One that is fair to the producer and should materially help the buyer, both domestic and export.

We refer particularly to the allowance for foreign material, and as we remember it at the Association meetings we have attended, you and others have stressed the fact that our export market particularly was being hurt by the condition of the beans when moved from ports. It stands to reason that the importer does not want to pay excessive freight on foreign material, most of which is a loss to him, this in addition to the extra expense of the freight of this foreign material. This is of course true with the domestic mills, and buyers.

As you know, a buyer direct from the producer and allowing the 3 percent foreign material in No. 2 cannot reclean or put the beans in really proper condition for shipment on account of having to sustain this loss, which oftentimes is more than his profits.

Again this foreign material often causes the beans to get out of condition, whereas if they were reasonably clean such would not be the case. As a rule the foreign material, at least during the first part of the season, contains more moisture than the beans themselves, which is the main reason for them getting out of condition.

Again why should this 3 percent of storage facilities be tied up by matter that is mostly waste?

When the soybean acreage was first increased in this territory the mills paid a nice premium for No. 1 over No. 2 beans, and up to as much as 6½ cents per bushel premium for the drier beans, according to moisture. It is our experience, and we believe true with all others buying direct from the producer, that the beans were delivered to us in a much better condition, both in the matter of foreign material and moisture, as the producer then had an incentive to properly harvest the beans.

It seems absurd to expect a producer to clean his beans properly and lose the 3 percent foreign material, for which he is paid the same as if it were beans. In turn, as stated above, the bean handler cannot afford to properly condition them without sustaining a loss, or without leaving him a fair margin for handling.

There is no good reason why the producers cannot clean their beans as well as they clean wheat and other grains in harvesting. There is as much reason for allowing a 3 percent dockage in No. 2 wheat as there is in allowing it in beans.

Do not know what can be done to correct this trouble, which admittedly is hurting the soybean industry, but urge you to go into this matter thoroughly and see what can be done towards correcting this trouble.—*R. C. Davis, secretary, R. C. Davis Cotton & Grain Co., Charleston, Mo.*

LETTERS

Incentive Lacking

To the Editor:

Soybeans produced in this area have excessive weed seed and other foreign material, and an effort must be made to try to remedy the situation or else probably lose our export market.

Several growers have told me that there is no incentive to re-clean their beans since federal standards for No. 2 beans allow a 3 percent foreign material tolerance. There are no premiums for quality at all; in fact, if a grower re-cleans his beans so as to reduce foreign material well below 3 percent he is really penalized as compared to the man who sells field-run.

We have tried to get growers, with some success, to use weed-seed attachments on their combines, but it seems to me that before we can really begin to get on solid ground on this matter, some system must be devised to make it *profitable* for farmers to sell their beans free of foreign material, either by reducing drastically tolerance, with severe penalties over the tolerance, or else by premiums, or any other reasonable way so that we can point out to growers that it means money in their pockets to produce quality goods.

Either the negative or affirmative approach will do the job. Reduce foreign material tolerance on No. 2's to 1 percent with substantial penalties over that or pay substantial premiums for fractions of 1 percent foreign material below 3. It wouldn't take long, with some educational work on our part, to see a great deal of improvement.—*J. W. Freeman, county agent, Suffolk, Va.*

Urges Soybean Imports

The following letter was published in a recent issue of Farmer and Stock-Breeder (England):

With the exception of pigs, the numbers of all animals are down and acreages devoted to all crops, including grass, reduced. A revision of farmers' prices, partly as the result of wage increases, therefore, seems inevitable.

The most important branch of the agricultural industry, viz., milk pro-

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duction, will again have to be made profitable to farmers in the same way as beef production has been made to pay.

Selling herds and killing cows to produce meat is a most undesirable practice; and it is evident that something must be done in conjunction with the Ministry of Food to bring about better results.

Cupboards are bare, and imports of manufactured goods will have to be further restricted.

Surely we can produce our own eggs, hams and meat, etc., by importing the raw materials that provide the feeding stuffs. The first product to help in this respect is possibly the soybean, which produces 18½ percent of excellent oil and a 79½ percent residue containing 50 percent quality protein.

There are adequate manufacturing facilities in this country to deal with thousands of tons of soya beans, and the supply position of feeding stuffs could be improved by the import of large available stocks of beans now awaiting shipment from China, through Soviet channels, if the Ministry of Food would make a decision to go all out to secure supplies, either by normal methods of trading or by barter.

Meal at about 40 pounds per ton could be produced at the present world prices of soya beans, and put the country at the same time in possession of oil at a price lower than that of teaseed oil as imported at present. This would, at the same time, have the beneficial effect of reducing the call for expensive manufactured foods, and products such as sweetened fat, which put large amounts of money into foreign pockets, and would narrow the gap between imports and exports.

The U. S. A. crop will amount to some 8 million tons, the Manchurian and Chinese crops are likely to be over 6 million tons.—*J. C. Ferree. Soya Foods Ltd., London EC3.*

Soys Boost Corn Yield

To the Editor:

I was somewhat amused to find my picture in your convention issue.

I regret that you did not state that I was the littlest bean grower attending the convention or describe me as Little Asa from Missouri.

I would like to mention my experience with corn following beans in my rotation. I have some ground I considered too rich for any crop except corn.

Then in 1950 my beans took in part of this ground which was fall plowed and put in corn again this year, while the corn-corn-corn ground was spring plowed and also put in corn.

You could not imagine the difference there was in adjoining rows. The bean strip yielded 250 percent more corn than on the continuous corn strip.

We have had the wettest summer in history. I did not plant a single acre of beans and a large percent of our corn crop just simply drowned out. To top it off our late corn was killed by freezing the 28th of September.—*E. W. Traschel, Helena, Mo.*

—sbd—

MINNEAPOLIS MANAGER

Midwest Burlap & Bag Co., Des Moines, Iowa, announces the appointment of Michael Sandler as general manager of the Minneapolis plant.

Sandler was graduated from Minneapolis High School, spent five years in the Navy during the second world war, is married and has two children. He is well-known in the industry, having been a representative from the Des Moines plant for several years. He lives in Minneapolis.

The Midwest Burlap & Bag Co. Minneapolis office and plant is located at 1716 First St. N.

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Special machinery designed and built for the job.

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PUBLICATIONS

Compare Soil Needs of Corn, Beans

Both corn and soybeans respond with increases in yield as the general fertility level of the soil is raised, according to the experimental evidence.

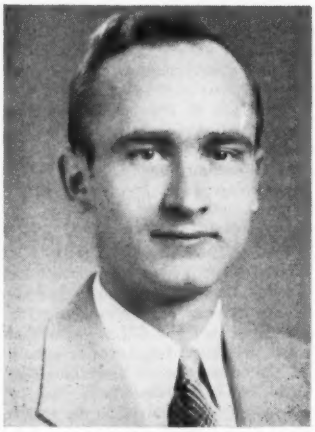
But corn and soybeans differ in at least two important respects in their soil fertility relationships:

1—Soybeans are partially independent of the soil nitrogen supply because of their nitrogen-fixing mechanism, while corn is completely dependent on the nitrogen supply of the soil.

2—The response to row applications of small amounts of fertilizer at planting time is good with corn and poor with soybeans.

To provide some insight into the relationship of the soybean crop to the soil and the differences between this crop and corn, an experiment was conducted at Iowa State College during the summer of 1946. The rates of dry matter production and of nitrogen, phosphorus, potassium, calcium and magnesium absorption were determined by measurements on samples of unfertilized, inoculated soybean plants harvested periodically during the season from two different areas in the same field. One was on Webster silt loam, the other Clarion loam. The acre yields were 43 and 25.9 on the Webster and Clarion soils, respectively.

There has been previous evidence that the increase in yield produced by a given amount of nitrogen as a delayed application on soybeans is greater than that produced at planting time. The Iowa investigation furnishes evidence that helps to explain the value of delayed nitrogen applications.



L. C. HAMMOND

During a seven-week period in July and August, the soybeans on the Webster soil were accumulating an average of about 100 pounds of dry weight and 2.6 pounds of nitrogen per acre per day. It is not surprising that during such a critical period of rapid nitrogen absorption, the supply of fixed nitrogen might lag behind plant requirements. Observations of field-grown soybeans in Iowa during this period of rapid growth have disclosed a number of instances in which the rather light-green leaf color was suggestive of nitrogen deficiency.

The fact that soybeans may respond to nitrogen is probably one of the reasons why soybean yields increase with the level of "soil fertility." There is a close association between nitrogen availability and so-called "soil fertility."

On the other hand, the nitrogen factor probably has some bearing on the relatively small response of soybeans to row applications of fertilizer at planting time. The high nitrogen content of the soybean seed and the property of nitrogen fixation would both tend to minimize the response to small amounts of fertilizer nitrogen during the early season.

On the basis of the experiments and other evidence the authors make the following suggestions:

1—If the soil phosphorus availability is low, both corn and soybeans will benefit from an additional supply of phosphorus during the middle and latter part of the season. Application of the phosphate in the furrow or by broadcasting and plowing it under will be more effective than row fertilization.

2—In addition, there will be need for a small row application of phosphate to meet early season requirements of corn. There is little or no need of row application to soybeans.

Concerning the question of whether "soybeans are hard on the soil," the authors compare the 43-bushel soybean crop with an equivalent 99-bushel corn crop in the amount of nutrients each would remove from the soil. If soybean seed only is removed, leaving the stems and the leaves on the land, the removal of soybeans does not cause heavy soil depletion, except for potassium, which is about twice as great as for corn. Soybeans remove less nitrogen and about the same amount of phosphorus as corn.

NITROGEN UPTAKE BY SOYBEANS ON TWO IOWA SOILS. By L. C. Hammond, C. A. Black and A. G. Norman, department of agronomy, Iowa State College, Ames, Iowa. Research Bulletin 384. Aug. 1951. (The demand for the bulletin has been such that it is already out of print.)

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Seed Treatment

The inoculation of chemically treated seed presents a paradoxical problem. Leguminous seed is inoculated to insure effective nodulation of the plants, while certain chemicals are used on seed to inhibit growth of microorganisms that might injure the seed after it is planted.

Under some soil conditions it may be more profitable to treat the seed with chemicals; under others it may be more beneficial to inoculate the seed. There is no rapid method of predetermining the need of either of these treatments. Consequently, it would be highly advantageous to be able to use both chemical and inoculant on seed with some degree of certainty that sufficient numbers of the rhizobia would survive and bring about effective results.

Of the chemicals used on seed for protective purposes, those that contain mercury, copper or zinc are extremely toxic to the rhizobia. Other seed chemicals which do not contain heavy metals and which are relatively insoluble in water are reported to be less toxic.

There is considerable lack of agreement as to the ability of the rhizobia to tolerate these chemicals when both are applied to the same seed. Lack of agreement on this question is perhaps a result of variance in experimental methods employed as well as lack of a good quantitative method of counting rhizobia in soils.

Experiments on this subject by the research department of the Nitragin Co. are reported.

COMPATIBILITY OF RHIZOBIA WITH SEED PROTECTANTS. By Marcia Ruhloff and Joe C. Burton, the Nitragin Co. Soil Science, Oct. 1951.

Pay More for Pellets

Farmers are willing to pay $1.50 to $2.00 more per ton for pelleted feeds —in which the feed or mash is compressed into rounded morsels—than for mash, because pellets are easy to handle, save labor, reduce the loss from wind blowing feed away, and each bite is a balanced ration, according to a U. S. Department of Agriculture study.

The cost of making mash into pellets for livestock and poultry feed ranged from $1.09 to $2.57 a ton at 14 cooperatively owned and operated feed mills according to the study, made under the Research and Marketing Act by the Cooperative Research and Service Division of the Farm Credit Administration. It is publish-

$5,000.00 REWARD

$5,000 reward, to anybody, anywhere in the world, who can name any other service, in the world, regardless of fee they charge, which has been as DEFINITE, as ACCURATE, as DEPENDABLE, as PROFITABLE to its subscribers, on SOYBEANS, COTTON, COTTONSEED OIL, WHEAT, CORN, OATS and listed STOCKS, as we have been

FOR THE PAST 2 YEARS OR THE PAST 22 YEARS

No one can win the $5,000, because no other market service in the world compares with ours.

Early in September, 1939, when Hitler started World War II, we advised buying soybeans, then 72c bu., and predicted they would go to $2 bu. They DID!

HUGE PROFITS ON SOYBEANS

In August, 1950, we advised buying soybeans, then around $2.40, and predicted $3 on that move. They went exactly to $3, where profits were taken, then a sharp reaction to around $2.80. We advised buying them back on that reaction, predicted $3.40 or higher on the next move. Profits were taken February 9, 1951, around $3.42. A few days later, the government put a ceiling on soybeans of $3.33; we advised selling them short, and covered shorts later at fine profits.

Our subscribers covered short JANUARY beans at $2.65-¼, or within 1c bu. of the lows, then bought soybeans around the lows, and we predicted $3 for them, by Thanksgiving. The day before Thanksgiving soybeans were around $3.05.

OTHER HUGE PROFITS

Our advices on cotton, cottonseed oil, wheat, corn and oats were also amazingly accurate and profitable. Bought cotton at 26.70c, profits taken at 45.39c ceiling; sold new-crop cotton short at 41.50, covered at 34.50. Sold WHEAT short at $2.58, covered at $2.37-½c, switched to long side around that figure and we predicted March wheat would go to $2.65. The high November 16, 1951, was $2.65-¼. We next predicted March wheat should decline to around $2.60, then up again. The low Nov. 23rd and 24th was $2.59-½, then up again.

$10,000 PROFITS ON OATS

A few weeks before Thanksgiving we advised buying OATS under 90c and predicted $1 by Thanksgiving. We suggested subscribers who had the margin, to buy 100,000 bu. and make $10,000 profit when they hit $1. The day before Thanksgiving, oats were above $1. A California subscriber wrote us Nov. 17th, he bought 120,000 bu. May Oats around 89-½ and had over $10,000 profit in them in a few weeks. This subscriber began taking our service December 1, 1929—never missed a single letter in all those 22 years!

OVER 30 YEARS MARKET EXPERIENCE

Our market experience dates back to the year 1918—thirty-three years! Market Advisory Bureau began business February 1, 1928, after 10 years actual market experience. In 1941, we took over the service of Market Forecaster Co. of Kansas City, following the death of its founder, Mr. Burton H. Pugh. Registered with Securities & Exchange Commission. Same management since inception.

Letters are written and mailed after close of market Tuesdays and Saturdays, giving definite advices on SOYBEANS, COTTON, COTTONSEED OIL, WHEAT, CORN, OATS and LISTED STOCKS. Our advices are definite, each trade is followed up, until closed out, in most instances at fine profits.

Will gladly send a few free-trial "sample" current letters to any reader of "Soybean Digest" who will fill in the blank below, immediately, and mail to MARKET ADVISORY BUREAU, P. O. Box 2106, Atlanta 1, Ga.

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Please send to undersigned a few current "free-trial" sample market letters. NO OBLIGATION. Prove to me how GOOD you are on SOYBEANS, COTTON, COTTONSEED OIL, WHEAT, CORN, OATS, the STOCK MARKET.

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ed as FCA Bulletin 63, "Costs of Pelleting Feeds at Selected Cooperative Feed Mills." Although cooperative feed mills provided the data, the results can be applied to other mills as well. A copy of the Bulletin may be obtained from the Division of Information and Extension, Farm Credit Administration, U. S. Department of Agriculture, Washington 25, D. C.

Steer Death Losses

A report attributes extensive death losses in a large herd of feeder steers to a hemorrhagenic factor contained in soybean oil meal (pellets).

Soybean oil meal from which the oil has been extracted with trichloroethylene solvent has been used as a feeding supplement for some years in beef cattle feeding operations, in dairy rations, and as a swine supplement. Its popularity among livestock feeders has increased rapidly because of its excellence as a source of protein.

This supplement has been considered safe because the minute quantities of trichloroethylene remaining in the meal have proved non-toxic. Feedings at high levels over an extended period have been shown to be fatal in a controlled experiment. The toxic factor(s) has not been determined. It is suggested that this is developed in the pellet by combination with complex protein molecules.

THE PRESENCE OF A HEMORRHAGENIC FACTOR IN SOYBEAN PELLETS EXTRACTED WITH TRICHLOROETHYLENE AS A SOLVENT WHEN FED TO CATTLE. By M. J. Twiehaus and E. E. Leasure, department of veterinary medicine, Kansas State College, Manhattan, Kans.

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Sunflowers

In 1947 a Minneapolis commission house encouraged the production of dwarf varieties of sunflowers in North Dakota by guaranteeing a market for the seeds at a price pegged to flaxseed. This support was dropped in 1948, but in the meantime considerable interest in the crop developed, and 22,000 acres of sunflowers were grown in North Dakota in 1948. The acreage has been shrinking since.

North Dakota farmers need an inter-tilled crop in the cash grain area west of the Red River Valley to help control weeds. Sunflowers are a hardy drought resistant crop that may serve the purpose.

Sunflower seed oil is a semi-drying oil that should find a ready place in the food trade because of its stability. Sunflower seed meal tops the list of vegetable concentrates in protein content, with over 52 percent. The protein is of a quality that should compete very well with other vegetable proteins in the food, feed and industrial markets.

OIL AND PROTEIN CONTENT OF SUNFLOWER SEED. By C. O. Clagett, Geo. W. Hoffman and Ingmar Sollin, North Dakota Agricultural College, Fargo, N. D. Bimonthly Bulletin, Vol. 13, No. 4, Mar.-Apr. 1951.

Safflower

About 75,000 acres of safflower are now grown in the northwestern United States. The development of the industry will place on the market increasing quantities of safflower meal which may be utilized as a protein concentrate.

The value of the meal, including its protein and fiber content, depends on the proportion of the hull removed from the seed.

In feeding trials at the University of Nebraska the meal from decorticated safflower seed fed to growing calves proved fully equal to soybean oil meal. The meal from undecorticated seed was about equal in value to soybean pellets on the basis of crude protein content.

FEEDING SAFFLOWER MEAL Bulletin 402. By Marvel L. Baker, Guy N. Baker, Carl Ervin, Lionel C. Harris and M. A. Alexander. University of Nebraska, Lincoln, Nebr.

Trypsin Inhibitor

That the poor nutritive value of raw soybeans is in part due to a trypsin inhibitor is now well-known. It has been found possible to overcome the effect of the soybean antitrypsin found in raw soybeans by heating the soybeans or by adding supplementary methionine to the diet. This has led to the belief that the methionine of raw soybeans is particularly affected by the inhibitor.

Now workers of the Grange Co., Modesto, Calif., offer evidence that other amino acids may be affected by the inhibitor as well.

EFFECT OF SOYBEAN ANTITRYPSIN ON EXPERIMENTAL AMINO ACID DEFICIENCY IN THE CHICK. By H. J. Almquist and J. B. Merritt, the Grange Co., Modesto, Calif. Archives of Bio-Chemistry and Biophysics. Vol. 31, May 1951.

Protein Level

Increasing the protein content of rations of pregnant range ewes by the addition of a protein supplement improved the average birth weight of their lambs in Alberta experiments.

Their rations included grass hay, oats and a mineral mixture.

The workers have concluded tentatively that the minimum protein requirement of pregnant ewes is greater than 7 percent but less than 10 percent.

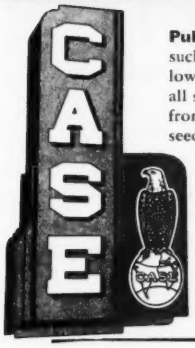
THE INFLUENCE OF LEVEL OF PROTEIN IN THE RATION OF MATURE EWES UPON LAMB PRODUCTION. By S. B. Slen, Dominion Experimental Station, Lethbridge, Alberta. Canadian Society of Animal Production, Western Section. Vol. 19, 1950.

Clean, Whole Soybeans from America's Favorite Combine

Pulled and powered by 2-plow tractors such as the Case "VAC" shown here, the low-cost Model "F-2" Combine harvests all small grains and dozens of other crops from tiny hard-to-get grass and clover seeds to big, fragile beans.

The dollar value of a soybean harvest is enhanced by its freedom from trash and crackage. Soybean producers who use the six-foot Case Model "A" Combine are dollars ahead because their crops come from the combine exceptionally clean and whole, with the highest possible amount delivered to bag or bin.

Case users are more dollars ahead because the Case Model "A" works fast and dependably, with little time out for adjustment and little outlay for repair. Case Combines are built in the 109-year-old Case tradition of making every part a bit better than might seem necessary. That is why Case Combines, like all Case machines, last long with small cost for upkeep. Its ability to do good, fast work at minimum expense and to keep going under difficult conditions has made the Case Model "A" truly America's favorite combine. Write for full information—or see the nearest Case dealer. J. I. Case Co., Dept. A-75, Racine, Wis.



9 AND 12-FOOT CASE COMBINES

Case builds both self-propelled and pull-type combines in these sizes, with choice of rub-bar or spike-tooth cylinders. All feature hydraulic header control, exceptionally seed-tight construction, long straw rack and exclusive Case "air-lift" cleaning.

GRITS and FLAKES... FROM THE WORLD OF SOY

◆ Six new regional sales managers have been appointed for the feed and soy division of Pillsbury Mills.: John F. Toeller, Jr., Wichita, Kans., for Kansas, Nebraska, Colorado, Texas and Oklahoma; Donald W. Thayer, Danville, Ill., for Illinois, Indiana and Michigan; Russell Somerville, for Ohio, Michigan and Pennsylvania; Harvey D. Bush, Madison, Wis., for northern Illinois, Wisconsin, northwest Iowa and the Michigan Peninsula; Alan J. Johnson, for Minnesota, North and South Dakota and northern Iowa; and Charles N. Hayslett, for northern Arkansas, southern Iowa and one territory in Illinois.

◆ Dr. Lorin E. Harris, Utah State Agricultural College scientist, has been named winner of the American Feed Manufacturers Association's $1,000 award for outstanding contributions to animal nutrition research. His research has dealt with the effect of feeding various levels of energy, protein and minerals to range cattle and sheep.

◆ Charles Ross & Son Co., 148-156 Classon Ave., Brooklyn 5, N. Y., has just issued its new illustrated catalog No. 118A. Complete details are given on latest model high-speed three-roller mills, double arm kneading machines, mixers of all types both horizontal and vertical, two-speed and variable speed motors, jacketed tanks for steam heating or water cooling, and various types of motor drives.

◆ *An article by R. L. Terrill, Spencer Kellogg & Sons, Inc., Buffalo, in the September issue of Chemistry in Canada was "Recent Developments in Drying Oil Research."*

◆ Farm youngsters will find hours of fun and entertainment in a new coloring book offered free by Master Mix feed dealers. The 12-page booklet includes 11 typical farm scenes, is suitable for either water-color or crayon drawing.

◆ G. A. Kent, president of Kent Feeds, Muscatine and Sioux City, Iowa, has announced the appointment of Charles F. Morgan, Washington, Iowa, Al Buech, Charlotte, Iowa, and Harold Buck, Galesburg, Ill., as district sales managers for the feed firm.

◆ Archer-Daniels-Midland Co. opened a sales office at Cincinnati, Ohio, Dec. 1. Located at 1133 Federal Reserve Bank Bldg., the office is managed by Daniel J. Marien, Jr. The office handles a wide variety of ADM oil products including soybean oils.

◆ *John J. Woods & Sons has moved from Livestock Bldg., Kansas City, Mo., to the Board of Trade Bldg., Kansas City.*

◆ B. I. Weller Co., 327 La Salle St., Chicago 4, Ill., manufacturer of grain elevating equipment, announces that increased facilities will enable the firm to handle the entire screw conveyor requirements of its customers. Prompt deliveries can now be made from stock. The Weller engineering force is available to work out any problems that may arise with elevating or conveying equipment.

◆ Organic chemicals division of Monsanto Chemical Co. plans to establish an experimental farm in the St. Louis area to test agricultural chemicals including fungicides, herbicides, insecticides, defoliants and plant foods.

◆ Roy A. Ribelin Distributing Co., Dallas and Houston, has been appointed sales representative for the chemical division of General Mills for the state of Texas. It will handle the company's line of fats and oils and organic chemical derivatives.

◆ *The 1952 spring meeting of the American Oil Chemists' Society will be held in Houston, Tex., Apr. 28-30 at the Shamrock Hotel. William Argue of Anderson Clayton & Co., Houston, will be general chairman.*

HEADS BLAW-KNOX SALES

CHARLES F. HAUCK

Charles F. Hauck has been appointed manager of sales promotion of the chemical plants division of Blaw-Knox Co., Pittsburgh, Pa., it was announced by E. W. Forker, head of the division.

Hauck has had 15 years' experience in chemical engineering and water processing. Originally of Cleveland, he is a registered professional engineer in Pennsylvania and Ohio.

Among Hauck's duties will be the development of new markets and the direction of advertising and technical information.

—s b d—

BOARD OF TRADE SLATE

The nominating committee of the Chicago board of trade has submitted its slate of officers, to be acted on at the annual election Jan. 21.

The following selections were made:

For president, Carl E. Bostrom, Lowell Hoit & Co.; first vice president, John R. Murray, Quaker Oats Co.; second vice president, Lawrence J. Ryan; directors, three year terms, Frank M. Conley, White, Weld & Co., Ford M. Ferguson, the Glidden Co., Edward J. Kazmarek, Illinois Grain Corp., Thomas A. Liston and William F. Rowley, Daniel F. Rice & Co.

Homer P. Hargrave, Merrill Lynch, Pierce, Fenner & Beane, and Roland McHenry, Cleveland Grain Co., were chosen for three-year terms on the nominating committee.

Help yourself get

BETTER STANDS AND HIGHER YIELDS OF SOYBEANS

Even bad weather won't stop your crop from getting off to a good start if you plant treated seed. And seed injured by frost or during combining has a better chance if it's treated with Du Pont "Arasan" seed disinfectant.

That's because "Arasan" protects seed against seed rot, mildew, blue stain and other diseases. Experiment stations prove that "Arasan" increases stands—in some cases up to 100%!

Regular use of "Arasan" over a lifetime would cost you no more than just *one* ruined crop because you pay only a few cents per acre to get the protection of "Arasan" every year.

For best results, treat the seed first—then inoculate just before you plant. "Arasan" protects seed from disease organisms and the inoculant helps the root system. Buy treated seed, or if you do the job yourself, follow directions on the "Arasan" package. For small grains and cotton use Du Pont "Ceresan" seed disinfectant. Du Pont, Semesan Section, Wilmington 98, Delaware.

Use seed treated with

◆ Construction features of process pumps for handling corrosive and abrasive liquors are described in Bulletin 08B6615B, "Allis-Chalmers Process Pumps," issued by Allis-Chalmers Manufacturing Co., 1159 S. 70th St., Milwaukee, Wis.

◆ In line with a 65-year-old custom, a large Christmas tree was erected during the holiday season on the trading floor of the Chicago Board of Trade from where it was visible for blocks down the "La Salle Street Canyon."—the financial district of Chicago.

◆ The soybean processing plant of Swift & Co., Champaign, Ill., has been declared regular for delivery on Chicago Board of Trade soybean oil meal future contracts.

◆ *Ray E. Rowland, vice president in charge of production and research, has been elected to the board of directors of Ralston Purina Co., St. Louis, Mo.*

◆ George A. Noxon, former production manager for Ralston Purina Co., St. Louis, Mo., died recently. He was with the firm for 29 years and retired about a year ago because of ill health.

◆ N. T. Joyner, a prominent figure in the glyceride oil field, has been appointed to the technical staff of the votator division of the Girdler Corp., Louisville, Ky. He has been assistant director of research for Lever Bros. Co., Cambridge, Mass.

◆ Properties and suggested uses for Arlecin, a soybean lecithin manufactured by Archer-Daniels-Midland Co., Box 839, Minneapolis 2, Minn., are described in ADM'S new Technical Bulletin No. 88.

◆ *The J. B. Ehrsam & Sons Mfg. Co., Enterprise, Kans., announces the appointment of W. J. Ehrsam, Jr., as president and general manager.*

◆ Fulton Bag & Cotton Mills announces the retirement Jan. 1 of Louis J. Jones, better known as "Lou", sales manager of the St. Louis plant for many years. He has been associated with Fulton Bag since 1908. His successor will be A. C. "Art" Jones, his nephew, who has also been connected with Fulton Bag in St. Louis for a long period of time.

◆ Construction features of Allis-Chalmers multi-stage type V centrifugal blowers for equivalent air pressures above 6.5 psig and inlet volumes above 1500 cfm are described in a new bulletin, "Multi-Stage Type V Centrifugal Blowers," 19B6104A. Write Allis-Chalmers Manufacturing Co., 1159 S. 70th St., Milwaukee, Wis.

◆ Robert L. Bundy has joined the staff of DCA, Inc., Chicago, Ill. He will specialize in trading in protein feed ingredients, in which he has had considerable experience. For the last 3½ years he has been with Wilbur-Ellis Co., Chicago.

◆ Elmer H. Campbell has been appointed head of the hog department of Pillsbury's feed and soy division at Clinton, Iowa. He has been with the division since July 1942 as territory sales manager and regional sales supervisor.

COOLEY TO LOS ANGELES

COOLEY TWEDT

Clark A. Cooley has been appointed manager of the Los Angeles, Calif., office of Spencer Kellogg & Sons, Inc., according to announcement by R. B. Jude, manager of oilseeds purchasing for the firm. Cooley has served as manager of the Spencer Kellogg buying organization since 1943.

Cooley's new position represents a promotion to greater responsibilities as the Los Angeles office handles the buying of oilseeds throughout southern California and Arizona as well as the sales of Spencer Kellogg's vegetable oils and protein meals in the area. He moved to California about Jan. 1.

Curtis Twedt will be advanced to manager of the Des Moines buying office, which conducts buying operations on soybeans and flaxseed in Iowa and adjacent areas. Twedt started with the company in 1941 and has been assistant at Des Moines since his return from service in the Marine Corps in 1946.

Mason Bittinger will be transferred to Des Moines as a soybean and flaxseed buyer and oil sales representative for the area. He has been located in the company's Chicago office for the past 15 months. Prior to that he spent a training period in the company's headquarters at Buffalo. He graduated from the University of Illinois in 1949.

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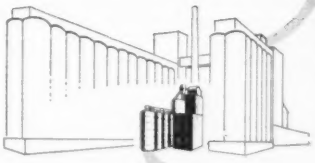
THE SOYBEAN CYCLE

From your farm, your soybeans move to

A country elevator or directly to



One of Purina's six soybean processing plants or one of many other processing plants. Soybean meal from both sources goes to

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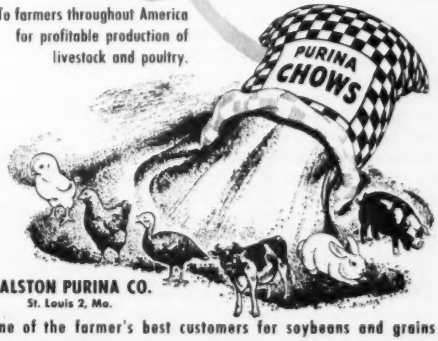

RALSTON PURINA CO.
St. Louis 2, Mo.

One of the farmer's best customers for soybeans and grains

WASHINGTON DIGEST

By WAYNE DARROW
Washington Correspondent for The Soybean Digest

PROCESSOR FIX. Officialdom acknowledges that crushers are in a damaging price squeeze, but no major remedial actions are now planned. It's also noted that feed mixers are having a tough time to operate within the price ceiling framework.

OPS says soybean crushers are in the worst fix. Both price and USDA officials recognize that expeller plants are closing up, and as one official remarked: "We're seeing a repetition of the old familiar pattern of the small outfits being driven out and leaving the industry to the big ones."

The troubles of cottonseed crushers aren't so bad, as OPS sees it. There's a leeway of $18 to $20 a ton on seed prices between the high base and prevailing rates. Southwestern crushers are in a squeeze which OPS is now trying to relieve. Aside from that, price officials say ceilings are affecting normal distribution patterns between regions rather than working much hardship.

OPS is not considering decontrol of oil meal prices. It aims to leave the present soybean meal ceiling alone "for a while." Uniform tailored ceilings are planned for cottonseed meal.

Gluten meal ceilings are now being adjusted up to restore normal differentials with gluten feed, and to put both in line with competing feeds.

A decontrol order for copra meal has been kicking around since June. There's a better than even chance it will be issued when all feed and meal ceilings are adjusted in line with corn. Reasons given for this possible move are that copra import prices are not controlled, and that while West Coast crushers can get relief out of CPR 22 provisions, they naturally won't because they'd have to give all their other products the same treatment.

Price officials are opposed to raising oil meal price ceilings in order to compensate for low oil prices. They figure soybean oil meal ceilings would have to be raised $20 to $25 a ton to relieve the crusher squeeze. OPS says this is out of the question —that it would amount to decontrol. USDA would probably discourage this, too, out of concern for livestock, dairy, and poultry feeders.

EXPORTS. Export prospects for beans don't look so good now to USDA as last summer and fall. Officials think improvement in edible oil prices depends largely on increased exports of fats and oils, chiefly beans. As of now that outlook is none too good.

Officials thought last summer that bean exports for 1951-52 would be close to the all-time high for 1950-51 —about 78 million bushels in whole bean equivalent. This estimate was later reduced to around 60 million bushels. That looks too high now.

It's pointed out in both USDA and ECA that predicting bean or almost any other farm exports can't be more than shrewd guesswork. Each country is a separate problem, and several "ifs" are attached to each.

The situation in each country is more apt than not to shift as the season unfolds. There is much jockeying between commodities due to changes in currency valuations, barter deals, and political expediencies. No one can count on requirements or procurement plans staying put for long. It makes the prediction of U.S. exports a nightmare.

Even the magnitude of current flow of most exports is unknown to officials at the time—there's nearly a two-month lag in Commerce Department export reports.

Yet officials are forced to make forward estimates of probable commodity exports to carry on the routine operations of a government that has its finger in every pie. Futhermore they're besieged by trade and industrial groups for estimates. So they make their estimates with fingers crossed by qualifications which are mostly disregarded, and keep adjusting original estimates as more information arrives.

This is partly alibi for positive export predictions this column has made, but more important, it's to enable readers to understand and therefore better appraise any and all export estimates.

Far Eastern imports of about 15 million bushels of beans will be knocked into a cocked hat if Korean peace comes. Japan, which took about 12 million bushels, is sure to trade with Manchuria for beans as soon as possible. But it's not known now how many surplus beans Manchuria has, nor what Korean demands may be if peace comes.

FEED OUTLOOK. The revised crop and livestock estimates made by the Bureau of Agricultural Economics last month to get in line with the Census are price bullish on corn, hogs and beef cattle.

The U. S. has about 3 percent less feed, 3½ percent fewer hogs and 2½ percent fewer cattle than BAE thought prior to the adjustment. The cut in feed supply is about offset by the reduction in livestock numbers.

Despite this, revised estimates drop the corn carryover next Oct. 1 to 400 million bushels, and many think it will be nearer 300 million bushels. Total carryover feed stocks are now estimated to decline from 29 million tons last October to 17 million tons next Oct. 1.

The 1951 corn crop is believed to be no more than enough for feeding alone. If so, last fall's carry-over of 744 million bushels will be reduced by the 388 million bushels it is estimated will be used for export, human food, industry, and seed.

Corn is expected to go to the ceiling soon. Officials think there'll be very little "free" corn by next July. CCC aims to "freeze" 100 million bushels of its stocks, but it will have a hard time hanging on to this next summer.

Reduced hog numbers in 1952, due mostly to the 9 percent cut in spring pig crop, indicate total slaughter of 84 million head compared to 86 million in 1951. Hog prices are estimated to average $1 to $1.50 a cwt. more for the year, with the largest rise coming the second half.

The revised estimate of 2 million fewer beef cattle probably means that the four-year decline of cattle prices due to the cattle cycle may not show up much before 1953, and that prices may not decline more than 25 percent from the 1951 high to the low in 1954 or 1955. The general pattern of the cycle is expected to hold.

The biggest question in USDA now

is what top fed cattle prices will do the next six months. The only thing most of the market men agree on is that prices won't press ceilings, and that there may be quite a drop next May or June.

BAE REPORTS. BAE revises its crop and livestock estimates every five years to put them roughly in line with the Census. The Census count is always low, and the probable error has been worked out and is applied. Every five years BAE sets a new bench mark, and yearly estimates thereafter are really pluses or minuses applied to the preceding year. This time the major adjustments came in corn, cattle and hogs. BAE began overestimating these in 1947—if the adjusted Census benchmark is correct —and by 1950 the cumulative pluses got rather sizeable.

BAE's soybean estimates were too low. The Census revision boosted 1950 production from 287 million to 299 million bushels. According to the revised figures, 1951 bean production was 19 million bushels under that of 1950.

The busts in estimates of cotton and peanut crops last fall, followed by the upsetting Census adjustments, may lead to radical changes in the estimating system. It all depends on how much of a rumpus Congress kicks up about it.

BAE won't ask for the added funds needed to modernize its estimation system. But it's quietly worked out a revamped system in readiness —if pressed—to tell Congress how a better job could be done, and what it would cost.

Thinking on the new plan is running along these lines: Use scientific sampling in selected areas to supplement estimates of farmer reporters, and the check methods now employed. Give the crop reporters some training. Try to get a much larger and more uniform response to farmer questionnaires.

Make interim check-ups between regular reports when crop conditions are changing fast.

Start some new services that are in demand. Among these are soil moisture tests to improve wheat and range grass estimates, and reports on the acreage and condition of improved pastures.

Most criticism of BAE is its failure to modernize its system of estimating. Officials have tried, but never could get the money. Congress may well be in the mood this year to spank the outfit, then vote at least part of what's needed to assure more reliable estimates.

Why Fewer Northern Acres Are Asked

A somewhat smaller governmental soybean acreage goal in Cornbelt states in 1952 is being compensated for by a requested increase in soybean acreage in the South, according to R. H. Roberts, acting director of Production and Marketing Administration, Washington, D. C.

Roberts made the statement in a recent letter to John W. Evans, American Soybean Association director from Minnesota.

"The 1952 soybean production goal has been established at 276 million bushels, approximately the same level as the 1951 production reported in the last crop report," stated Roberts. "It is estimated that this level of production will meet all requirements for soybeans and will provide for a carry-over of edible oils considerably greater than the carry-over reported for Oct. 1.

"It is believed that the soybean goal can be produced on a somewhat smaller total acreage than that planted for soybean production this year. The great importance of obtaining increased corn production in the high-yielding areas of the Cornbelt has made it necessary to request some reductions in soybean acreage in the Cornbelt states. Corresponding increases in the soybean growing areas in the South have been requested in order to maintain an adequate production of soybeans."

	1951 Soybean Goals	1951 Harvested Acres	1952 Goals
	Thousands of Acres		
Ohio	1,100	1,124	1,040
Indiana	1,600	1,551	1,590
Illinois	3,750	3,637	3,450
Iowa	1,900	1,512	1,550
Minnesota	1,100	1,077	1,065
Michigan	130	120	110
Wisconsin	30	44	25
N. Dakota	40	28	32
S. Dakota	50	60	70
Nebraska	50	58	37
Kansas	363	401	485
Missouri	1,160	1,290	1,200
Arkansas	400	607	650
Mississippi	250	425	385
Alabama	90	88	125
Tennessee	165	183	200
Kentucky	135	130	135
Louisiana	40	33	50
Oklahoma	20	77	50
N. Carolina	300	300	350
Virginia	140	166	165
S. Carolina	40	83	55
Georgia	25	21	35
Maryland	40	77	60
Delaware	45	61	45
Pennsylvania	20	22	16
New York	10	7	10
New Jersey	15	20	14

Market Street

We invite the readers of THE SOYBEAN DIGEST to use "MARKET STREET" for their classified advertising. If you have processing machinery, laboratory equipment, soybean seed, or other items of interest to the industry, advertise them here.

Rate: 10c per word per issue. Minimum insertion $2.00.

WANTED—SMALL HEXANE SOLVENT plant, 25 or more tons daily capacity. Reply Soybean Digest, Box 319p, Hudson, Iowa.

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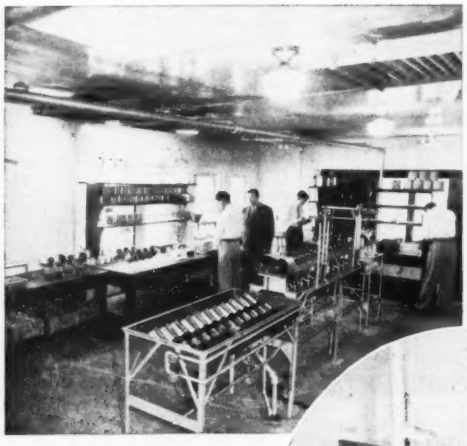
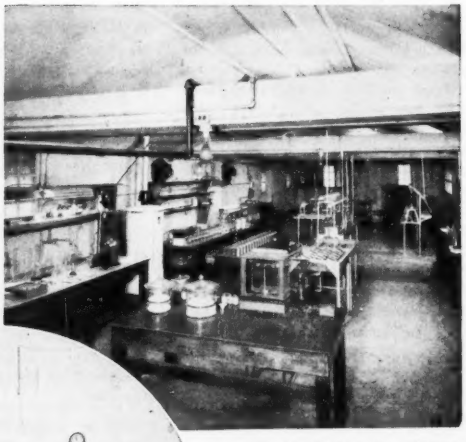


The Decatur, Ill., laboratory is equipped with the most modern equipment for refining soybean oils.



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IN THE MARKETS

Slump in Beans, Oil

Features of the December markets were the virtual disappearance of nearby soybean oil meal and a slump in soybeans and oil at year's end.

There was little trading in soybean oil meal except on a tie-in basis with other scarce feed ingredients. Some of the deals being made were reminiscent of the nylon stocking days during World War II.

Delivery of some November meal futures contracts was defaulted on the Chicago Board of Trade, the first default in five years on that exchange. Processor offerings were generally lacking through March. There was a little April forward meal being offered, but buyers were slow to take it at ceiling prices.

Soybean oil was generally easy in December, and soybean futures slumped after January reached a seasonal peak of $3.10 Dec. 10, with a break in the market at month's end.

Among factors causing the weakness in beans and oil were the large stocks of soybean and cottonseed oil on hand, a poorer outlook for exports than was earlier expected, an unfavorable processing margin which caused some plants to shut down, the unfavorable corn-hog feed ratio and heavy marketing of hogs, year end selling for tax purposes, and uncertainty concerning a truce in Korea.

A cargo of soybeans was sold to Japan at relatively cheap prices. Six hundred tons of soybean oil were sold for January shipment to Europe.

Crude soybean oil opened at 13 cents for the month. High was 13¼ cents Dec. 10. The close was 11¾ cents, also the low for the month.

January soybean futures opened for the month at $3.03. High was $3.11 Dec. 10. The close was $2.93, which also was the month's low.

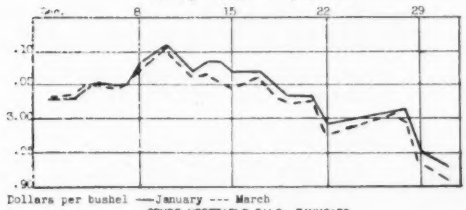
Soybean oil meal pressed against the $74 ceiling set for bulk Decatur all month.

MEMPHIS SOYBEAN OIL MEAL FUTURES DEC. 31*
Bulk Decatur. Contract 100 tons. Jan., 74.00b; Mar., flat 72.80; May, flat 71.80; July 71.75@72.00; Aug., 71.00@72.00; Oct., 66.50@66.90.

CHICAGO SOYBEAN OIL MEAL FUTURES CLOSE DEC. 31*
Jan., 74.00b; Mar. 73.00b-73.50a; May, 72.00b-72.50a; July, 72.00b-72.50a; Oct., 67.50b-68.00a.

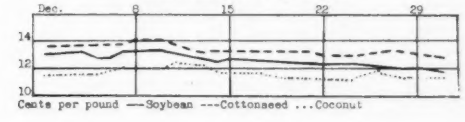
NEW YORK SOYBEAN OIL FUTURES CLOSINGS DEC. 31*
Jan., 11.90; Mar., 12.12b; May, 12.34-35; July, 12.55; Sept., 12.75-70; Oct., 12.53b.

FUTURES, CHICAGO NO. 2, SOYBEANS



Dollars per bushel —January --- March

CRUDE VEGETABLE OILS, TANKCARS



Cents per pound —Soybean ---Cottonseed ...Coconut

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CHICAGO SOYBEAN OIL FUTURES CLOSINGS DEC. 31*

Jan., 11.75, 11.85; Mar. 12.05, 12.10; May 12.32, 12.35; July, 12.51, 12.56; Sept., 12.70, 12.65b-12.70a; Oct., 12.50b-12.60a.

a—Asked. b—Bid. *Reported by the Chicago edition of Wall Street Journal.

FUTURES TRADING AND OPEN CONTRACTS IN SOYBEAN OIL MEAL ON MEMPHIS MERCHANTS EXCHANGE CLEARING ASSOCIATION (IN TONS)

	Volume of Trading	Open Contracts		Volume of Trading	Open Contracts
Nov. 26	1,400	174,600	Dec. 11	14,500	122,700
Nov. 27	10,800	171,800	Dec. 12	9,100	122,200
Nov. 29	14,000	165,900	Dec. 13	3,800	122,100
Nov. 30	15,800	162,600	Dec. 14	2,100	120,900
Dec. 1	2,900	162,600	Dec. 15	2,100	121,600
Dec. 3	3,400	160,400	Dec. 17	2,700	121,800
Dec. 4	9,300	154,700	Dec. 18	4,600	123,200
Dec. 5	4,300	153,300	Dec. 19	2,300	123,700
Dec. 6	6,800	153,700	Dec. 20	1,800	124,400
Dec. 7	19,500	145,800	Dec. 21	4,400	125,800
Dec. 8	15,700	142,500	Total for 22 days reported	158,400	
Dec. 10	7,100	131,000			

• PROCESSING OPERATIONS. Reported by Bureau of Census, Department of Commerce, for September, October.

PRIMARY PRODUCTS EXCEPT CRUDE OIL, AT CRUDE OIL MILL LOCATIONS: PRODUCTION, SHIPMENTS AND TRANSFERS AND STOCKS, OCT. 1951—SEPT. 1951

Products	Production		Shipments and transfers		End of month stocks	
	Oct. 1951	Sept. 1951	Oct. 1951	Sept. 1951	Oct. 31, 1951	Sept. 30, 1951
SOYBEAN:						
Cake and meal†	497,799	344,147	506,350	377,069	26,954	35,505
Lecithin‡	1,705,793	1,401,287	1,457,014	1,296,671	2,195,370	1,946,591
Edible soy flour, full fat†	503	290	511	528	91	99
Edible soy flour, other†	6,025	3,985	5,751	4,254	1,121	847
Industrial soy flour†	(1)	1,584	(1)	1,376	568	558

(1) Included in "All other" to avoid disclosure of individual operations.
† Unit of measure in tons. ‡ Unit of measure in pounds.

SOYBEANS: RECEIPTS, CRUSHINGS AND STOCKS AT OIL MILLS, BY STATES, OCT. 1951—SEPT. 1951
(Tons of 2,000 pounds)

State	Receipts at mills		Crushed or used		Stocks at mills	
	Oct. 1951	Sept. 1951	Oct. 1951	Sept. 1951	Oct. 31, 1951	Sept. 30, 1951
U. S.	2,267,356	278,398	646,684	441,643	1,748,889	128,217
Arkansas	86,677	3,707	13,301	4,107	75,253	1,877
Illinois	1,013,665	144,210	288,285	194,629	781,621	56,241
Indiana	209,258	44,317	60,427	43,247	179,758	21,927
Iowa	179,144	22,763	81,678	71,437	107,584	10,118
Kansas	45,548	2,425	13,222	1,919	33,889	1,563
Kentucky	79,005	9,317	19,534	15,092	63,139	3,668
Minnesota	45,381	9,226	24,476	21,166	21,219	314
Missouri	120,627	18,088	24,686	18,621	110,705	14,764
Nebraska	(1)	(1)	3,432	(1)	13,030	(1)
N. Carolina	6,844	(1)	1,203	(1)	5,751	110
Ohio	276,634	19,056	68,289	52,552	216,044	7,699
Oklahoma	8,753	(1)	(1)		8,602	(1)
Texas	(1)	(1)				
All other	195,820	5,289	48,151	18,873	141,294	9,936

(1) Included in "All other" to avoid disclosure of individual operations.

SOYBEAN PRODUCTS: PRODUCTION AND STOCKS AT OIL MILL LOCATIONS, BY STATES, OCT. 1951—SEPT. 1951

State	Crude oil (thousand pounds)				Cake and meal (tons)			
	Production		Stocks		Production		Stocks	
	Oct. 1951	Sept. 1951	Oct. 31, 1951	Sept. 30, 1951	Oct. 1951	Sept. 1951	Oct. 31, 1951	Sept. 30, 1951
U. S.	214,799	148,658	65,782	42,931	497,799	344,147	26,954	35,505
Arkansas	3,834	1,371	1,540	446	10,526	3,424	1,778	546
Illinois	99,831	67,957	29,835	18,548	216,217	146,183	9,981	10,670
Indiana	20,108	14,350	6,868	7,023	47,737	33,777	1,629	2,778
Iowa	26,128	22,871	6,564	4,445	64,795	57,126	3,009	8,438
Kansas	4,375	653	1,462	386	10,633	1,508	697	(1)
Kentucky	6,906	5,413	643	632	14,856	11,609	436	322
Minnesota	7,253	6,791	2,902	2,534	18,943	17,186	745	793
Missouri	7,384	5,668	1,520	1,264	19,563	15,109	1,675	1,640
Nebraska	1,029	(1)	369	(1)	2,890	(1)	(1)	(1)
N. Carolina	322	(1)	(1)	(1)	959	(1)	206	507
Ohio	22,628	17,441	5,647	3,672	53,891	42,527	2,477	6,172
Oklahoma	(1)		(1)		(1)		(1)	(1)
Texas				(1)			(1)	(1)
All other	15,001	6,143	8,432	3,981	36,789	15,698	4,321	3,639

(1) Included in "All other" to avoid disclosure of individual operations.

• USAGE OF SOYBEAN OIL MEAL. Factory production of crude soybean oil in October totaled 214,799,000 lbs. compared with 148,658,000 lbs. in September, reports Bureau of the Census. Factory production of the refined oil was 143,782,000 lbs. in October; 130,391,000 lbs. in September.

Factory consumption of crude soybean oil totaled 154,398,000 lbs. in October; 139,687,000 lbs. in September. Consumption of the refined oil was 147,902,000 lbs. in October; 127,916,000 lbs. in September.

Factory and warehouse stocks of crude soybean oil totaled 120,785,000 lbs. Oct. 31; 90,907,000 lbs. Sept. 30. Stocks of the refined oil totaled 75,169,000 lbs. Oct. 31; 79,870,000 lbs. Sept. 30.

Usage of crude soybean oil during October: soap 115,000 lbs.; paint and varnish 305,000 lbs.; other inedible uses 1,426,000 lbs.

Usage of refined oil in October: shortening 47,502,000 lbs.; margarine 6,691,000 lbs.; other edible uses 7,670,000 lbs.; soap 47,000 lbs.; paint and varnish 4,428,000 lbs.; lubricants and greases 3,000 lbs.; other inedible products 6,604,000 lbs.

Usage of hydrogenated edible soybean oil in October: shortening 19,656,000 lbs.; margarine 33,940,000 lbs.; other edible uses 323,000 lbs.; inedible uses 9,000 lbs.

• EXPORTS. U. S. exports of soybeans and soybean oil for October, as reported by the Office of Foreign Agricultural Relation, U. S. Department of Agriculture.

Soybeans	1,194,485 bu.
Soybean oil (crude)	7,040,804 lbs.
Soybean oil (refined)	23,002,149 lbs.

Converted to a soybean equivalent basis, the exports for October amounted to 4,407,479 bushels.

The grain inspection department of the New Orleans Board of Trade reports that 2,073,000 bushels of soybeans were cleared for export shipment from the Port of New Orleans during November.

• PRICE SUPPORT. A total of 3,270,042 bushels of 1951-crop soybeans had been put under Commodity Credit Corporation price support through Oct. 31, Production and Marketing Administration reports.

A total of 725,257 bushels were farm-stored under loans; and 2,463,397 bushels were warehouse-stored under loan. A total of 81,388 bushels were covered by purchase agreements.

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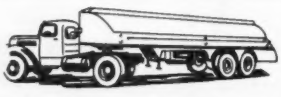

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● **STOCKS.** Production and Marketing Administrations Commercial grain stock reports.

U. S. Soybeans in Store and Afloat at Domestic Markets (1,000 bu.)

	Oct. 29	Nov. 5	Nov. 12	Nov. 19	Nov. 26
Atlantic Coast	59	126	229	533	569
Gulf Coast	171	213	473	418	68
Northwestern and Upper Lake	93	208	290	378	443
Lower Lake	4,274	4,346	4,982	4,954	4,762
East Central	3,071	3,335	3,346	3,262	3,250
West Central Southwestern & Western	1,006	1,244	1,574	1,727	1,882
Pacific Coast					
Total current week	8,674	9,972	10,894	11,272	10,974
Total Year ago	9,288	12,999	14,856	15,741	15,860

U. S. Soybeans in Store and Afloat at Domestic Markets

	Dec. 3	Dec. 10	Dec. 17
Atlantic Coast	999	1,248	1,443
Gulf Coast	568	294	367
Northwestern and Upper Lake	468	477	482
Lower Lake	3,855	3,184	2,988
East Central	3,296	3,161	3,052
West Central, Southwestern & Western	2,010	1,872	1,939
Total current week	11,196	10,236	10,271
Total year ago	16,157	15,316	15,354

U. S. Bonded Soybeans in Store and Afloat at Canadian Markets

Total current week	162	162	162
Total year ago	96	96	96

Total North American Commercial Stocks

Total current week	11,358	10,398	10,433
Total year ago	16,253	15,412	15,450

● **SOYBEAN GLUE.** Consumption of soybean glue by the softwood plywood industry in October totaled 4,972,000 lbs., compared with 4,409,000 lbs. in September.

Stocks of soybean glue totaled 2,912,000 lbs. Oct. 31; 3,162,000 lbs. Sept. 30.

Consumption of phenolic resin glue in October was 2,760,000 lbs.; and of all glues, 8,703,000 lbs.

● **SHORTENING.** Standard shortening shipments reported by the Institute of Shortening and Edible Oils, Inc., in pounds.

Dec. 1	4,936,553
Dec. 8	4,857,016
Dec. 15	4,293,251
Dec. 22	3,634,265

● **LIMIT TRADING.** At their meeting Dec. 26 the directors of the Chicago Board of Trade adopted a resolution by which trading in Jan. 1952 soybean meal futures will be limited to liquidating purposes only, excepting that anyone having soybean meal of contract quality in a position to deliver may make a short sale in the Jan. 1952 futures, but for delivery purposes only. The new regulation became effective at the opening of the market Dec. 27.

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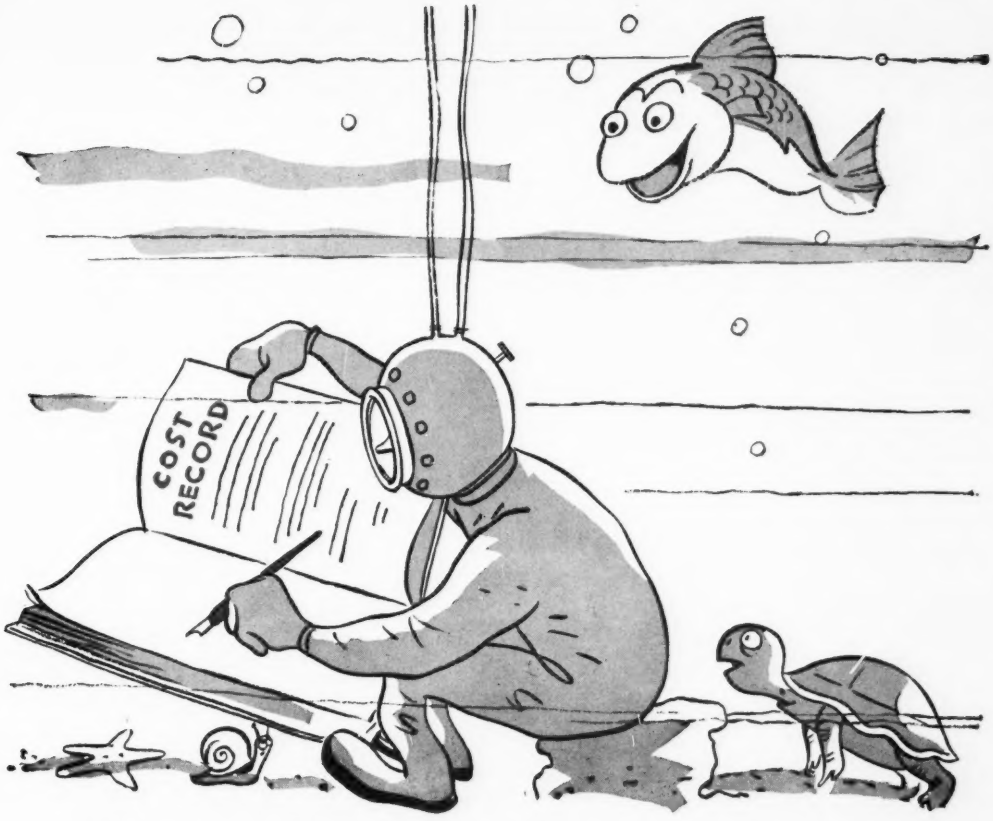

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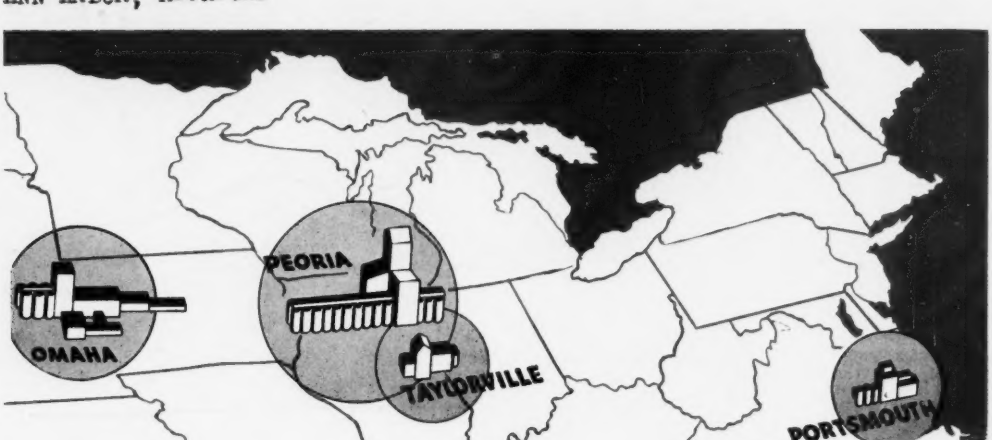

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